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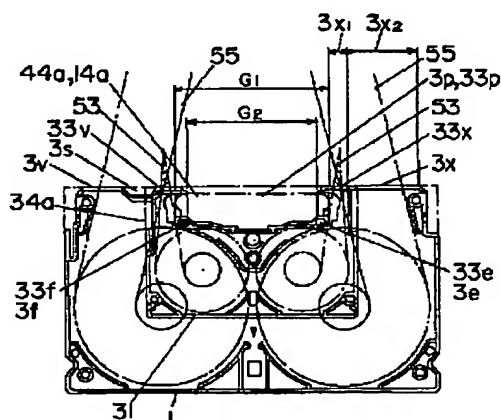
(54) **TAPE CASSETTE**

(57) Abstract:

**PURPOSE:** To perform the positioning of a large size cassette highly accurately by the position defining member of a device side in a recording/reproducing device, in which a plurality of cassettes having different sizes are loaded.

**CONSTITUTION:** In an L cassette 1 having engaging parts 3x and 3v in its front face, the engaging part 3x forms a wide surface from a cassette side face part to a cassette center, its one part and the engaging part 33x of an S cassette 31 are laid over the other and the engaging part 3v is formed in a region different from the engaging part 33v of the S cassette 31. Cassette holder position defining parts are respectively formed in positions relative to the engaging parts 3v, 33v and 33x. The S cassette 31 is positioned in the 33v and 33x positions and the L cassette 1 is positioned in the 3v and 33x positions.

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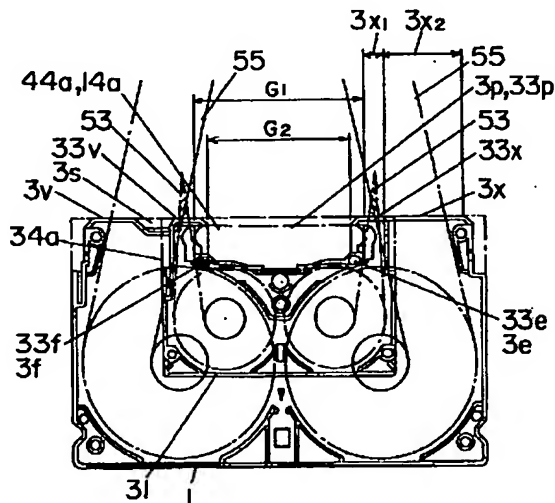
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(54) 【発明の名称】 テープカセット

(57) 【要約】

【課題】 複数種類のサイズが異なるカセットが装着される記録再生装置において、大型カセットの位置決めを、装置側の位置規制部材により高精度に行うこと。

【解決手段】 前面に係止部3x、3vを有するLカセット1において、係止部3xはカセット側面部からカセット中央よりまで幅広い面を形成しており一部はSカセット31の係止部33xと重なり合う一方、係止部3vはSカセット31の係止部33vとは異なる領域に構成されている。カセットホルダーの位置規制部は係止部3v、33v、33xにそれぞれ相対する位置に構成され、Sカセット31は33v、33xの位置で、Lカセット1は3v、33xの位置で位置決めされる。



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## 【特許請求の範囲】

【請求項1】 小型のカセットが装着される記録再生装置に同様に装着でき、前記録再生装置に設けられたカセット位置決め部材が挿入される2つの位置決め孔と、前記録再生装置に設けられたカセット挿入規制部材と当接する係止部を有した大型のカセットであって、前記2つの位置決め孔を小型カセットの2つの位置決め孔と共通位置にして配置したとき、前記録再生装置のカセット挿入規制部材と当接する小型カセットの両側面部に近接して設けられた2つの係止部の1つの係止部とは共通な位置にある第1の係止部と、カセット両側面部に近接して設けた複数の第2の係止部を下ハーフに構成したテープカセット。

## 【発明の詳細な説明】

## 【0001】

【発明の属する技術分野】本発明は、記録再生装置に選択的に使用される複数のテープカセットの記録再生装置への挿入規制手段に関する。

## 【0002】

【従来の技術】従来より、磁気記録再生装置において、長時間記録化のニーズと、小型化、軽量化のニーズの両立のため、同じ記録フォーマットでありながら、カセットサイズの異なるシステムがある。例えば放送用のVTRとしては、「D3フォーマット規格」がそのシステムに相当する。この「D3フォーマット規格」では、3種類の大きさの異なるカセット（S、M、L）が規格化されている。

【0003】図50に最も記録時間の短いSカセットと、中間の記録時間を有するMカセットとを記録再生装置に装着した場合の平面図を示す。Mカセット101は、供給リール102と巻き取りリール103を有し、カセットに植立したガイドポスト104、105によって磁気テープ107を開口部106の空間で前面に架張している。供給リール102のテープ最大巻径とリールハブ108の外径から延びる接線109、110で表される三角領域は、磁気テープ107がMカセット101の上下カセットハーフに非接触でカセット空間外へ導くことができるテープ案内領域111である。そのため、カセットから出た磁気テープ107を案内する第1のポストは磁気テープ107がこのテープ案内領域111に存在するように配置しなければならない。接線109の位置は上下ハーフの側壁の構成で決まる。一方接線110は、ガイドポスト104とリールハブ108を結ぶ接線で決まる。

【0004】Sカセット112は、開口部106の大きさ、ガイドポスト104、105の位置共にMカセット101と共通である。また、その他の構造もMカセット101とはほぼ同じであるが、カセットサイズの制限と、リールハブ113の位置関係から、Sカセットのテープ案内領域119は、Mカセット101のテープ案内領域

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111に比べ小さくなり、Mカセット101のテープ案内領域111に包含される。

【0005】次にこの様な2つのカセットを選択的に記録再生装置に装着し、記録再生を行うためのテープ走行系を説明する。回転ヘッドシリンダ115は、磁気テープが180度巻回し、高速回転する。116はキャプスタンモータで、117はピンチローラである。供給リール102を出た磁気テープ107はSカセット112のテープ案内領域119内でポスト118に巻回されるため、Sカセット112の供給リール120を出た磁気テープ107も上下ハーフ含めて非接触でポスト118まで案内される。同様に、ポスト121の配置も巻き取りリール103、巻き取りリール122とポスト121間の磁気テープ107が他の全ての物に対し非接触に案内されるように考慮されている。

【0006】前面に架張した磁気テープ107は図48に示すように、前面蓋123と裏蓋124とで覆われ外部から容易に触れられないように保護されている。この前面蓋123は弾性部材で閉じる方向に付勢され、かつ図示しないロック部材によりこの位置に保持されている。記録再生装置に装着すると、ロック部材によるロックを解除し、弾性部材に抗して前面蓋123は図49の様に回動させられ、磁気テープを露出させる。この前面蓋123の開放動作は、裏蓋124の一部が開放部材125に当接しMカセット101が下降する事によって裏蓋124を開放させ、この裏蓋124に連動する前面蓋123が共に開放される。

【0007】この様に、複数種類のテープカセットを同一の記録再生装置に装着して記録再生するシステムでは、それぞれのカセットに相互に様々な工夫がなされている。例えば、カセットを高精度に装置に位置決めするための位置決め部材を挿入する位置決め孔を図50の様に配置したとき共通な位置となるようになされている。

【0008】図51にLカセット130とSカセット112を開口部を共通位置にして配置したときの裏面図を示す。開口部106を挟んで位置決め孔135、136がLカセット130、Sカセット112にそれぞれ設けられている。位置決め孔は135が真円の孔で、136が長孔となっている。この位置決め孔135、136の周囲に示すハッチングエリアはカセットの高さ受けが可能なエリアを示すものである。これもL、Sカセットで共通である。Lカセット130には、後方に幅広なハッチングエリア131、132がある。これも高さ受けエリアである。同様にSカセット112には137、138の高さ受けエリアがある。この様な構成なので、Sカセット112、Lカセット130を装着可能な装置では、位置決め孔133、134に相当する位置に位置決め部材を配置する。

【0009】なおこの位置決め部材は高さ受けエリア133、134に相当するツバを形成してカセットの高さ

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も受けるようになっている。Sカセット112が装着された場合には137、138に相当する位置に高さ受けピンを配置し、Lカセット130が装着された場合には131、132に相当する位置に高さ受けピンを配置するものである。Sカセット112とLカセット130について説明したが、Sカセット112とMカセット101の組み合わせ、Mカセット101とLカセット130の組み合わせでも基本的には同じである。

【0010】図52にSカセット112、Mカセット101、Lカセット130のそれぞれの前面蓋から見た図を示している。Sカセット112の両側面部に近接したハッチングで示す112a、112bは前面蓋112cの切り欠きから臨む下ハーフの突起である。この突起112a、112bはほぼ前面蓋112cの表面まで露出しており、図51に示すように記録再生装置に設けられた係止部材139に当接してSカセット112の位置を規制するものである。

【0011】つまり、カセットを取り出し位置と記録再生位置に搬送するカセットホルダに挿入する時のカセット挿入方向の位置規制部である。Sカセット112の突起112a、112bが係止部材139に当接する位置まで挿入すると後は自動的にモーター等でカセットを所定の位置まで搬送する。この係止部材139と突起112a、112bの当接によりカセットのカセットホルダでの位置が規制されるわけである。Mカセット101、Lカセット130にも同様に前面蓋101c、130cの切り欠きから突起101a、101b、130a、130bが臨んでいる。カセットのサイズは異なるが、この突起の位置はほぼ同じ位置にある。これは、図51にあるようにその係止部材139を共通に使えるというメリットがあるためである。

【0012】

【発明が解決しようとする課題】この様に、突起位置を共通にすることは、その突起に係止する位置規制部材を単一で構成できるというメリットがあるが、共通位置はカセットサイズの異なるSカセットによって決まる。Sカセットの側面部に近接したなるべく離れた2点で行うこととなる。Sカセットにとってはこれは十分に広い2点ではあるが、最もサイズの大きいLカセットからみればカセットサイズに比べて十分広いとはいえない。

【0013】よって、この2つの位置規制部材のカセット挿入方向の相対位置がずれば、カセットは正しい位置に対してどちらかに平面的に回転した姿勢をとることになる。その結果カセットの様々な構成部品の位置が正しい位置からずれるが生じる。

【0014】この様にずれが生じるとカセットホルダの搬送をどれだけ高精度に制御してもカセットの例えば位置決め孔に位置決め部材が挿入されない、リールロック解除部材が解除のための孔に入らない等の問題が生じる。そういう観点から位置規制部材によるカセットの位

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置決めが高精度に行われるような構成がカセットとして求められる。Lカセットはカセット横幅に比べて突起部の間隔が狭いため、Lカセットはその位置が他のカセットに比べて大きくばらつくことが予想される。

【0015】本発明の課題は、この様に、同一の装置で選択的に使用される複数のカセットにあって、記録再生装置のカセットホルダ内での位置のバラツキが大きく、カセットを記録再生装置に正しく位置決めできないということである。そこで本発明の目的は、それぞれのカセットにあってカセットホルダ内での位置制御を高精度に行い得るカセット構成を提供するものである。

【0016】

【課題を解決するための手段】この課題を解決するために本発明の手段は、大型カセットの係止部を小型カセットの係止部と共通な位置に第1の係止部を設けると共に、大型カセットの両側面部に近接した位置に第2の係止部を設けているため、大型カセットはこの第2の係止部を利用して位置決めすれば同じメカニズム精度であってもその間隔が広いので高精度に位置を制御できる。

【0017】

【発明の実施の形態】本発明の請求項1に記載の発明は、小型のカセットが装着される記録再生装置に同様に装着でき、前記記録再生装置に設けられたカセット位置決め部材が挿入される2つの位置決め孔と、前記記録再生装置に設けられたカセット挿入規制部材と当接する係止部を有した大型のカセットであって、前記2つの位置決め孔を小型カセットの2つの位置決め孔と共通位置にして配置したとき、前記記録再生装置のカセット挿入規制部材と当接する小型カセットの両側面部に近接して設けられた2つの係止部の1つの係止部とは共通な位置にある第1の係止部と、カセット両側面部に近接して設けた複数の第2の係止部を下ハーフに構成したテープカセットであり、複数のカセットを選択的に同一装置に使用する場合であってもそのカセットホルダに大型カセットの両側面部に近接して設けられた第2の係止部に係止する規制部材を設ければ、大型カセットは非常に高精度に位置決めができる。

【0018】（実施の形態1）以下図面と共に実施の形態を説明する。なお記録時間の長いテープカセット（以下Lカセットと称する。）及び記録時間の短い小型テープカセット（以下Sカセットと称する。）共に、左右一方しか図示していないが、ことわりのない限り左右対称の構成である。

【0019】図2(a)、(b)、(c)はLカセット1の外観平面図、側面図及び正面図である。Lカセット1は主に上ハーフ2と下ハーフ3と前面蓋4と天蓋5とから構成される。図3は、図2の裏面図である。下ハーフ3には、リールが露出するリール孔3a、リールロック孔3b、位置決め孔3c～3f、始端LED用孔3gが構成されている。またハッチング部3h～3kは、

カセット高さ基準となる高さ受けエリア（以下サポート部と称する）でLカセット1の四隅近傍にそれぞれ独立で4カ所設けられている。この4つのサポート部3h～3kは記録再生装置に設けるカセット高さ決めピンを配置可能な範囲を示す。

【0020】前方にある位置決め孔3e、3fは開口部3pの空間の両サイドに設けられ4つのサポート部から離間した位置にあるが、後方にある位置決め孔3c、3dは、前述の4つのサポート部の中の2つのサポート部3h、3iの範囲内で、しかもカセット両側面部に極めて近い位置に設けてある。

【0021】図10は図3と同様下ハーフ3の裏面図、そして図11(a)は図10におけるA-A断面図、図11(b)は図10におけるB-B断面図、図11(c)は図10におけるC-C断面図である。位置決め孔3cと3dは図11(b)に示すようにサポート部となる最下面部（一点鎖線で示すライン）に構成されているが、位置決め孔3eと3fは図11(a)に示すようにそれよりd1だけ窪んだ位置に、始端LED用孔3gは、d1よりさらに窪みの大きいd2窪んだ位置に構成されている。

【0022】開口部3pは詳細は後述するが、図15の蓋開放図でもわかるようにカセット下ハーフ3の底面に開放された空間が、上ハーフ2の上面部まで連通している。

【0023】図13は蓋が閉じた状態だが、この状態でも裏蓋13の後方（カム溝3rが形成されている方の空間）では、同じように上ハーフ2の上面近傍まで空間が形成されている。ゆえにこの開口部3p空間にある位置決め孔3e、3fが、図11(a)に示すようにd1だけ窪んで構成しても問題はない。また同様に始端LED用孔3gが図11(c)に示すようにd2だけ窪ませても他には何等影響を与えない。

【0024】また図10に示すように、位置決め孔3e、3fの存在する窪みは、その位置決め孔3e、3fの孔径よりも十分大きな面を形成している。これは、後述するが、Sカセットの高さ決め部を有する位置決め部材の大径部との干渉を避けるために若干大きな面で窪みを構成しているのである。位置決め孔3dと3fは真円の孔だが、3cと3eは長孔形状となっている。図16に示すように供給リール8と巻き取りリール10に始端及び終端を係止された磁気テープ14は、下ハーフ3の前面に構成されたテープ案内3mに巻回されて案内されている。

【0025】図1に、Lカセット1の走行系との対応を示す。ハッチングで表示しているテープ案内55は磁気テープを案内する領域で、出入する磁気テープ14がこの領域に入るように記録再生装置のポスト51を配置しなければならない。そうすると、磁気テープ14は供給リール8、巻き取りリール10からカセットのどの部

品にも接触せずに、走行系のポスト51に至るため非常に高精度にテープ走行をさせる事ができる。

【0026】図5から図7にはリールロック機構を示す。図5の左半分はリールロック爪7が供給リール8から離間したブレーキoff状態を、右半分はリールロック爪7が巻き取りリール10の爪部10aに係合したブレーキon状態を示す。図6は、ブレーキonの断面図、図7は、ブレーキoffの断面図を示す。リールロック爪7はバネ9によってリール方向に付勢されているため、通常は、図5右半分に示すように先端の爪部7aが巻き取りリール10の爪部10aに係合して巻き取りリール10の回転を禁止している。

【0027】なお巻き取りリール10は、時計方向に回転するときテープを巻き取る機構のため反時計方向には回転しにくく時計方向には回転し易い構成となっている。供給リール8の場合はその逆となる。リールロック爪7は図3に示すカセットの下ハーフ3に設けられたリールロック孔3b位置にて下方に開放した凹部7bが設けられている。この凹部7bに記録再生装置の軸11が進入する事により、図7に示すようにバネ9に抗してリールロック爪7が後退してリールロック爪7の爪部7bは、供給リール8の爪部8aや巻き取りリール10の爪部10aから離間し、それぞれのリールは回転が可能となる。

【0028】次に、図8、9で供給リール8の構造を説明する。供給リール8には、上下フランジが一体構成され、下側のフランジ外周部に前述の爪部8aが設けられている。リール中央上部の凸部8bには、上ハーフ2に設けられたリール押さえバネ（図示せず）により、下方に付勢されている。図8は供給リール8と記録再生装置に設けられたリールテーブル12との係合状態を示す。リールテーブル12の先端部に設けられた、外方に開く複数の羽根部12aは供給リール8に同様に設けられた羽根部8cと係合して、リールテーブル12と一体に回転する構成となっている。

【0029】図9に示すように、供給リール8の羽根部8cの下部には円筒部8dが、その下方には円錐部8eが構成されている。円筒部8dはリールテーブル12と係合したとき、リールテーブル12とのセンタリングを行うもので、供給リール8が回転する時に回転振れを最小にするものである。また、円錐部8eは供給リール8とリールテーブル12の係合をスムーズにするための案内部である。供給リール8の下面部にはリールテーブル12に当接する環状の突起部のリール受け部8fと、同心円構成で下ハーフ3に設けられたリール孔3aよりもわずかに小さい環状の突起部からなるリール保持部8gが構成されている。この2つの環状の突起部である、リール受け部8fとリール保持部8g間は図にあるように、環状の凹部8hが構成されている。リールテーブル12との非係合状態では、供給リール8の位置はこの下

ハーフ3のリール孔3aと供給リール8のリール保持部8gとの嵌合により規制される。

【0030】図16に示す前面に架張された磁気テープ14aを覆う蓋構成は図13に示すように、天蓋5と裏蓋13と前面蓋4からなる。図23に示すそれぞれの蓋の外観斜視図を参照しながら各々の構成を説明する。前面蓋4は側面4dに設けられた軸4aが図22に示す上ハーフ2の切り欠き部2bと下ハーフ3の切り欠き部3nに挟まれて回動自在に支持され、図示しないバネにより反時計方向（蓋を閉じる方向）に付勢されている。その前面蓋4の両端の係合孔4bには天蓋5の側面5bに設けられた軸5aが回動自在に支持されている。さらに、天蓋5の中央より支持孔5cが形成されており、この支持孔5cで裏蓋13の軸13aが係合して裏蓋13が回動自在となっている。

【0031】天蓋5の他方の軸5dは、図22、図13に示す上ハーフ2の側面部2cに形成されたガイド溝2aに係合案内される。また、裏蓋13のガイド軸13bは、下ハーフ3の開口部3p側面に形成されたカム溝3rに係合案内される。

【0032】以上説明したように天蓋5と裏蓋13と前面蓋4は連動しかつ、上ハーフ2、下ハーフ3に案内される構成であるため、前面蓋4を回動させるとそれに連なって天蓋5及び裏蓋13はカム溝3r、ガイド溝2aに案内され後方に移動する。

【0033】図13から図15でこの蓋機構の開閉動作を説明する。前面蓋4の側面部4dの一部に記録再生装置の蓋開放部材（図示せず）を当接させ相対的にテープカセットを下降させる事により、前面蓋4は軸4aを中心に時計方向に回動する。それにつれて、天蓋5はガイド溝2aに沿って後方で上ハーフの上部へ移動する。また裏蓋13もカム溝3rに沿って上方へ移動する。前面蓋4が略90度回動すると、図15の様に前面に架張した磁気テープ14aは露出される。

【0034】図10に示す下ハーフ3のD-D断面を図12に蓋機構も含めて示す。下ハーフ3には、最も突出した係止部3vと3xが開口部3pを挟んで両サイドにそれぞれ設けられている。係止部3xは、3vに比べ広い範囲となっている。この係止部3xは、後述するSカセット31と重ねて配置した（図38）時に、Sカセットの存在する範囲の係止部3x1とその範囲外の3x2に分けられる。3vはSカセット31の存在する範囲外である。

【0035】この範囲外でLカセット1の側面部に近接した位置にある係止部3vと3x2が第2の係止部で、3x1が第1の係止部である（以降、3v、3xは単に係止部と称する）。この係止部3v、3xは図2（a）に示す様に前面蓋4から露出して設けられ、前面蓋4の表面部4gとほぼ同一面となっている。

【0036】係止部3v、3xは、記録再生装置のカセ

ットホルダ（図示せず）に設けられたカセット位置規制部材に当接し、カセットホルダ内におけるカセットの位置規制を行うものである。その係止部3v、3xからわずかに窪んだ位置に係止部3v、3xと同様に開口部3pを挟んで両サイドに設けられた蓋係止部3u、3wが構成されている。この蓋係止部3u、3wは前面蓋4の裏面部4h（図13参照）に当接して、前面蓋4が閉じたときの姿勢を決めると共に、前面蓋と下ハーフによるカセットの密閉性を確保するものである。

10 【0037】なお、以上説明した蓋係止部3u、3w、係止部3v、3xと前面蓋4の構成およびその考え方はすでにVHSや8ミリビデオカセットで採用されているものである。さらに下ハーフ3は、蓋係止部3uと係止部3vに挟まれた位置で係止部3vよりもd3だけ窪んだくぼみ3sを設けている。前面蓋4では図23に示すように磁気テープ14aを覆う前面部4fと両側面部4dに加え前記くぼみ3sに対応して、下ハーフ3と同一高さで平行な平面である突起部4eを設けている。よってこのくぼみ3sは前面蓋4の突起部4eによって覆われているため密閉性を損う事はない。図16に示すようにこのくぼみ3sは供給リール8から巻き取りリール10に至る磁気テープ経路外にあり直接的に外気が磁気テープに触れる事も少ない。

20 【0038】図4は、蓋ロック機構を表す図である。図4（b）は平面図で、前面蓋4を想像線で示す。図4（a）は側面図である。下ハーフ3の側面に軸6dを中心として回動自在に設けられた蓋ロック爪6は図示しないバネにより時計方向に付勢されている。そのため、前面蓋4の突起4cと蓋ロック爪6の爪部6aが係合し、前面蓋4の時計方向の回動は禁止されている。この蓋ロック爪6の突起6bは下ハーフ3の一部から露出するように構成され、かつ下ハーフ3のこの突起6bの前方は切り欠かれているため、図に示すハッチング部6cの範囲内で記録再生装置から解除部材（図示せず）を進入させればカセットと干渉することなく、この蓋ロック爪6の突起6bに当接し、蓋ロック爪6をバネに抗して反時計方向に回動させる事が出来る。その結果、前面蓋4はロックが解除され、軸4aを中心に時計方向に回動させる事が出来る。

40 【0039】図16には、テープ始端及び終端を検出するための検出光路15を表す。下ハーフ3の始終端LED用孔3gに記録再生装置に設けられた発光素子を挿入し、光路上のカセット外の位置に受光素子をそれぞれ配置する事によりテープの始端、終端が検出できる。図17は蓋開放状態であるが、下ハーフ3の側面部に光路孔16を設けて受光素子と発光素子間に光路を形成する。この光路孔16は、前面蓋4が開放したときのみ図17の様に露出し、前面蓋4が閉じている状態では前面蓋4の側面4dが光路孔16を塞ぐため密閉性が確保できる。

【0040】次にテープに記録した情報を記録再生装置とカセット間で授受する機能について説明する。図16のE-E断面を図18の(b)に、F矢視図を図18(a)に示す。17はメモリP板で、半導体メモリと外部との信号の授受を行う4本の端子17aを備えている。このメモリP板17は図16、22に示す下ハーフ3に設けられたスリット部3tに上方から挿入されて保持され上ハーフ2で抜け防止を構成している。このスリット部3tは開口部3p側で開放しており、前述の端子17aがこの開口部3p側に露出している。メモリP板17の後方には始端LED用孔3gが構成されている。

【0041】図19～図21は、記録再生装置に設けられた信号授受用コネクタとメモリP板17のコンタクト状況を表す。コネクタ18は、図40にその外観を示すが、発光素子19と4本の板バネ状のコネクタ端子20から成り、記録再生装置に固定して設けられている。4本のコネクタ端子20は図19で時計方向の付勢力を有しており、メモリP板17の端子17aにそれぞれ一定の接圧で接触している。よって、この端子17aを通じてメモリP板17の半導体メモリへの情報の書き込み、読み出しが可能となる。

【0042】端子17aの位置をメモリP板17の下方に位置させ、コネクタ端子20の屈曲部20aと端子17aとの接点20bの距離を大きくとることで、端子17aのバネ定数は小さくしてある。つまり、カセットとコネクタ18の相対位置のばらつきによっても、メモリP板17に対するコネクタ端子20の接圧の変化が少なく、安定した接圧で高信頼性の接点構成を確保できるものである。コネクタ端子20をU字型に構成し、屈曲部20aを上方向にしたのは、カセットの装着、取り出し操作で、コネクタ端子20に無理な力が加わって、コネクタ端子が変形をおこさないように保護するためである。

【0043】以上説明したLカセット1と互換性を有するSカセットについて説明する。図24(a)、

(b)、(c)、はSカセット31の外観平面図、側面図及び正面図である。Sカセット31はLカセット1と同様、主に上ハーフ32と下ハーフ33と前面蓋34と天蓋35とから構成される。また、Sカセット31はLカセット1よりも記録時間が短く、カセットの平面サイズも小さい。厚さにおいても、Lカセット1の厚さH2に対し、Sカセット31の厚さH4は、 $H2 > H4$ という関係にある。

【0044】図25は、図24の裏面図である。下ハーフ33には、係止部33vと33xが開口部33pを挟んで両サイドにそれぞれ設けられている。この係止部33v、33xは図24(b)に示す様に前面蓋34から露出して設けられ、前面蓋34の表面部34gとはほぼ同一面となっている。係止部33v、33xは、記録再生装置のカセットホルダ(図示せず)に設けられたカセッ

ト位置規制部材に当接し、カセットホルダ内におけるカセットの位置規制を行うものである。

【0045】さらに下ハーフ33には、リール孔33a、リールロック孔33b、位置決め孔33c～33f、始端LED用孔33gが構成されている。またハッチング部33h～33kは、カセット高さ基準となる高さ受けエリア(以下サポート部と称する)でSカセット31の四隅近傍にそれぞれ独立で4カ所設けられている。この4つのサポート部33h～33kは記録再生装置に設けるカセット高さ決めピンを配置可能な範囲を示す。前方にある位置決め孔33e、33fは開口部33pの両サイドに設けられサポート部33j、33kの範囲内にある。

【0046】一方後方にある位置決め孔33c、33dもまたサポート部33h、33iの範囲内にある。この位置決め孔33c、33dはLカセット1の位置決め孔3c、3dと同様Sカセット31の両側面部に極めて近い位置に設けてある。図26(a)は図25におけるG-G断面図、図26(b)は図25におけるH-H断面図である。位置決め孔33c～33fはサポート部となる最下面部(一点鎖線で示すライン)に構成されているが、始端LED用孔33gは、d4だけ窪んだ位置に構成されている。図8、図35に示すLカセット1の下ハーフ3の最下面部からのテープ中心高さH1とSカセット31の下ハーフ33の最下面部からのテープ中心高さH3は、テープ最大巻き径が異なる理由から $H1 > H3$ というようにカセット全体厚さと共にLカセット1の方が大きくなっている。そういう構成の中で、Lカセット1とSカセット31のカセット厚み方向の寸法関係は次のようになる。

【0047】 $H1 - d1 = H3 \dots\dots\dots (1)$

$H1 - d2 = H3 - d4 \dots\dots\dots (2)$

(1)式は、2つのカセットをテープ中心を基準に考えたとき、Lカセット1の位置決め孔3eと3fの存在する平面は、Sカセット31の位置決め孔33c～33f及びハッチング部33h～33kの存在する平面いわゆる下ハーフ33の最下面部と同一高さの平面である事を示す。図41に示すように厚さの異なるSカセット31とLカセット1はテープ中心が同一高さとなるように位置決め支持される。その時、下ハーフ33に構成されたLカセット1の位置決め孔3c、3dの存在する平面つまり窪みの高さは丁度Sカセット31の下ハーフ33の最下面部と等しいということである。

【0048】図56を用いてさらに詳細に説明する。図56(a)はSカセット31の位置決め孔33f(無論33eも同様である)に位置決めピン142が係合している図である。位置決めピン142はシャーシ143に植設されており、位置決め孔33fの直径と同じ直径である位置決め部142bとその径よりも大径なカセット受け部142aとからなる。カセット受け部142aは



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Sカセット31の下ハーフ33に当接しており、このカセット受け部142aにてSカセット31の高さを規定している。この位置決め孔33fはサポート部33kの範囲内に存在するため、このカセット受け部142aはサポート部33kに接してSカセット31を正しく保持していることとなる。

【0049】一方図56(b)は同一位置決めピン142にLカセット1が位置決めされている図である。Lカセット1は前述したように、テープ中心を基準に考えるとH1-H3=d1だけカセット底面が低い位置にある。Lカセット1の位置決め孔33f、33eの窪みもカセット下ハーフ33よりもd1だけ窪んで構成しているため、この位置決め孔33fに位置決めピン142を係合させると図(b)のようにカセット受け部142aはその上面が窪み面に当接してLカセット1の高さを規定することとなる。カセット受け部142aはその外径部が窪みの側壁に干渉しないように径を設定すればよい。

【0050】(2)式は、2つのカセットをテープ中心を基準に考えたとき、Lカセット1の始端LED用孔33gの存在する平面とSカセット31の始端LED用孔33gの存在する平面は同一高さの平面である事を示す。

【0051】図34で示すテープ案内部53の領域は図1で示す55と同じであるため、磁気テープがこの領域に案内される様にポスト54を設けなければならない。供給リール38と巻き取りリール40に始端及び終端を係止された磁気テープ44は、下ハーフ33の前面に構成されたテープ案内部33mに巻回されて案内されている。このテープ案内部33m間に架張された磁気テープ44aと前述の位置決め孔33eと33f間距離L1と図16に示すLカセット1の同様の距離L3は同じである。

【0052】また、Sカセット31の位置決め孔33eと33f間距離L2もLカセット1の位置決め孔33eと33f間距離L4と同じである。この事は、記録再生装置側の位置決めピンを、Lカセット1とSカセット31で共用できるということになる。その結果、図38の如く前面に架張する磁気テープ4aと44aは同一位置となる。

【0053】この時、Lカセット1の後方に設けられた位置決め孔33c、33dそしてSカセット31の後方に設けられた位置決め孔33c、33dは当然位置が異なる。またそれぞれカセットの側面部近傍に設けているのでカセットのサイズも異なることから両者の位置決め孔の相対位置関係は等しいものとはならない。

【0054】図27から図29にはリールロック機構を示すが、基本的には、Lカセット1のリールロック機構と同じ構成であるので、構成の説明は割愛する。ここでSカセット31のリールロック孔33bとLカセット1

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のリールロック孔3bは図38の如く配置した場合、その位置が異なるため、記録再生装置に固定した部材で両カセットに対応することはできないが、同一形状の部材で解除出来るように構成してあるので、Lカセット1のリールロック解除部材である軸11を可動式とし、Sカセット31のリールロックも解除し得る構成とした。

【0055】図35に供給リール38の構造を表しているが、リール構造も基本的には、Lカセット1の供給リール8と同じであるので、異なる部分のみ説明をする。供給リール38の下面部にはリールテーブル42に当接する環状の突起のリール受け部38fが設けられている。Lカセット1では、リール受け部8fと、同心円構成でリール保持部8gが構成されていたが、Sカセット31では、このリール受け部38fのみとしてリール受け部38fよりわずかに大きいリール孔33aを構成する事で、供給リール38の位置はこの下ハーフ33のリール孔33aと供給リール38のリール受け部38fとの嵌合により規制している。

【0056】図41にLカセット1とSカセット31を同一リールテーブル50に装着した図を示す。図41において右側にSカセット31とリールテーブル50との係合状態、左側はLカセット1とリールテーブル50との係合状態を示す。羽根部8c、円筒部8d、円錐部8eは、Sカセット31とLカセット1は同一構成であり、リールテーブル50と係合し、回転力を伝達する事ができる。Lカセット1とSカセット31では、前述したようにテープ中心から下ハーフまでの高さが異なるため、それぞれのカセットのリール受け部3f、38fも図に示すように異なる。

【0057】しかしSカセット31のリール受け部38fは、Lカセット1のリール受け部8fよりも小径としていること、さらにLカセット1のリール受け部8fの高さをSカセット31の下ハーフ33の最下面部よりも低くしているため、リールテーブル50をリール受け部38f、8fにそれぞれ当接して、それぞれのリールの高さを保証するリール支え部50a、50bを独立に構成できる。

【0058】次に、蓋構成と蓋開閉動作を図31～図33に示すが、Lカセット1と同様、天蓋35と裏蓋43と前面蓋34からなる。外観構成も図23に示すLカセット1と同じであるが、唯一異なるのは図12に示す構造である。Lカセット1では下ハーフ33にくぼみ3sを設け、さらにそれに対応して、前面蓋4に一部突起4eを設けていたが、Sカセット31では、前面蓋34と下ハーフ33の突き合わせ部はLカセット1に見られるような突起部4eはなく、前面蓋34は磁気テープ44aを覆う前面部44fと側面部44d(図示しないが、Lカセット1の前面蓋4の側面部4dと同じ)からなる略コの字形状である。

【0059】図30は、蓋ロック機構を表す図である。



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(a)は平面図で、(b)は側面図である。蓋ロック機構もLカセット1と同じ構成なので、詳細な説明は割愛する。

【0060】図34には、テープ始端及び終端を検出するための検出光路45を表す。下ハーフ33の始端LED用孔33gに記録再生装置に設けられた発光素子を挿入し、光路上のカセット外の位置に受光素子をそれぞれ配置する事によりテープの始端、終端が検出できる。図17でLカセット1の蓋開閉と光路孔16の開閉について説明したが、Sカセット31も同様の構成である。

【0061】図36、37、39は、メモリP板17の保持機構を示す。(2)式で説明した様に、テープ中心を基準として、Lカセット1とSカセット31の始端LED用孔33g、33gの存在する平面は同一高さにある。この始端LED用孔33g、33gの上方に設けてあるメモリP板17の位置も2つのカセットのテープ中心からの高さ関係は同一である。また図38の様に配置した時、Lカセット1とSカセット31のそれぞれのメモリP板17は共通な位置となる。つまり2つのカセットを装着可能な記録再生装置では、一つのコネクタ18で両カセットに対応できる。

【0062】図38の様にSカセット31とLカセット1を配置した時の、記録再生装置へのカセットの位置決めについて説明する。まず、位置決めは、両カセット共にカセットの前方の位置と後方の位置にそれぞれ2つずつ計4カ所あるが、この様に配置した場合は、前方の位置決め孔3e、3f、33e、33fが共通になるため、Lカセット1の3e、3f、Sカセット31の33e、33fに対して位置決めピンを設ける。それに対応して、カセットの高さを保証するための高さ決めピンの配置は、Lカセット1では、後方にある3h、3iにそれぞれ配置し、Sカセット31では、同じく後方にある33h、33iにそれぞれ配置する事となる。

【0063】3h、3iはSカセット31とは干渉しないので、Lカセット1用の高さ決めピンは適当な位置を選択できる。Sカセット31用の高さ決めピン52は図45(a)の位置に設ける。Lカセット1を装着した時のリール8部分の断面図を(b)に示す。(a)図に示す高さ決めピン52の位置は、リール8のリール保持部8gとリール受け部8fの中間の環状の凹部8hの位置となる。すでに説明したようにSカセット31はLカセット1よりもd1だけ高い位置にあるため、本来ならSカセット31の高さ決めピン52はその高さ差d1だけ干渉するわけだが、この環状の凹部8hは図41の拡大図でも明らかなようにSカセット31の底面よりも高い位置である。よって、高さ決めピン52をLカセット1装着時に移動させなくても、リール保持部8gとリール受け部8f間の環状の凹部8hの位置となり、干渉を避ける事ができる。リール8は回転するが、8g、8fは環状の突起であり、この凹部も環状の凹部であるため回

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転しても干渉することはない。

【0064】位置決め孔3e、3f、33e、33fを共通位置に配置した図38では、Lカセット1の下ハーフ3の前面に設けられた係止部3x、3vの平面とSカセット31の下ハーフ33の前面部の係止部33x、33vの平面は同一平面となる。Lカセット1の係止部3xは係止部3vよりも広い受け面を有し、この様に配置したとき、前述したようにSカセット31の係止部33xと一部重なり合う事になる第1の係止部3x1とLカセットの側面部近傍の第2の係止部3x2を連ならせて構成している。一方係止部3vはSカセット31の係止部33vとは重なることはなく、側面近傍の第2の係止部を形成している。

【0065】図38の様にカセットを配置したとき、Lカセット1の開口部3pの横幅G1はSカセット31の開口部33pの横幅G2よりも広がっているが、テープ案内53は大部分が55と重なっている。故に、この共通部分にいずれのカセットのテープも案内できるように共通のポストを配置する事ができる。Sカセット31の前面蓋34の左側面部34aの位置には、Lカセット1の下ハーフ3のくぼみ3sがある。この部分を拡大し、記録再生装置にカセット蓋開放部材56を設けた時の関係図が図42である。

【0066】図42において、Lカセット1の蓋開閉のため、前面蓋4の側面部4dに当接する位置に開放ピン(L)58が設けられ、同様にSカセット31の側面部34の左側面部34aの位置に開放ピン(S)57が開放ピン(L)58よりも若干低い位置に設けられている。この2本の開放ピンは略コの字形のカセット蓋開放部材56に取付けられ、開放ピン(S)57とカセット蓋開放部材56はLカセット1の下ハーフ3のくぼみ3s部分に位置し、下ハーフ3との干渉を避けている。

【0067】次に、図44には蓋開放ピン(S)57による前面蓋4の蓋開放軌跡を示す。(a)～(f)については、蓋開放ピン(S)57の位置を共通にしてカセット位置を表示している。Sカセット31の場合には前面蓋34の左側面部34aに当接して蓋開放を行い、蓋開放ピン(L)58とは干渉しないため、問題はない。図43は蓋開放ピン(L)58による前面蓋4の蓋開放軌跡を示し、蓋開放ピン(L)58による前面蓋4の左側面部4aとの当接及び蓋開放、また蓋開閉軌跡における蓋開放ピン(S)57と前面蓋4、下ハーフ3との位置関係を表している。ここで、蓋開放ピン(S)57はLカセット1の下ハーフ3のくぼみ3sの位置、つまり前面蓋4の突起部4eの位置にあるが、各軌跡位置の図で明らかなように、突起部4eと蓋開放ピン(S)57はどの位置においても干渉していない。

【0068】次にこのようなカセットサイズの異なるテープカセットの記録再生装置への装着例を説明する。図46はLカセット1を記録再生装置に装着した図を、図

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47はSカセット31を同じ記録再生装置に装着した図を示す。磁気テープ14、及び44はガイドポスト66、61、62、65と、回転ヘッドシリンダー60とキャプスタン64、ピンチローラー63によって案内される。供給リール8及び巻き取りリール10と係合するリールテーブル50は中継ギア67の回転中心を回転軸として回転可能に支持されている。図46ではLカセット1のリールの位置に、図47ではSカセット31のリールの位置にそれぞれ移動して位置決めされる。

【0069】キャプスタン64の駆動力をベルト70によってセンターギア69に伝えそれに転接する駆動ギア68で中継ギア67を選択的に駆動する。以上のように、リール位置が異なってもメカニズムの負担が少なく構成できる。

【0070】次にこの様な2つのカセットを記録再生装置のカセット取り出し位置と記録再生が可能な位置に搬送するカセットホルダー75にカセットを挿入した時の位置決めについて図53から図55で説明する。2つのカセットを図38に示す配置にする場合、カセットホルダー75内でも2つのカセットを同じように配置して保持しなければならない。まずSカセット31は、図54に示すようにカセットホルダー75の左右側板75dから離間して中央部に位置が制御される。左右方向の位置制御手段についてはここでは具体的には述べないが、過去各種方法が提案されておりその何らかの方法で左右位置を制御してP方向から挿入される。

【0071】そうすると、下ハーフに構成された係止部33x、33vがそれぞれカセットホルダー75のカセット挿入規制部材75a、75bに当接してカセットホルダー75に対する位置が決まる。一方Lカセット1は、図53に示すようにカセットホルダー75の左右側板75dにガイドされながら同様にP方向から挿入される。そうすると、カセットホルダー75に設けられたカセット挿入規制部材75a、75cと当接してカセットホルダー75に対する位置が決まる。

【0072】カセット挿入規制部材75bは、75c、75aと同一平面上にあるが、Lカセット1の係止部3x、3vよりも前面蓋4の厚さだけ窪んだ蓋係止部3uの位置に相対向するため75bと3u間には隙間が生じる。よって、Lカセット1の下ハーフ3は75a、75cにて位置が決まる。

【0073】図55はLカセット1のみを使用する記録再生装置のカセットホルダー76にLカセット1を挿入する例を説明する。この場合は、規制部3x、3vの特に側面部に近い位置にカセット位置規制部材76a、76bを位置させればよい。カセット横幅に対して十分に広い間隔でカセットを受けることができカセットの位置規制が非常に高精度に行われる。

【0074】

【発明の効果】以上のように本発明によれば、サイズの

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異なる2つのカセットを記録再生装置に選択的に使用する場合は、小型カセットに設けられた係止部の1つと共通位置に設けられた第1の係止部と、大型カセットの側面部近傍に設けられた複数の第2の係止部の1つとでカセットの位置規制を行うことができる。この2つの間隔は、小型カセットの2つの係止部間隔よりも十分大きくとれるので、大型カセットの平面的な姿勢を高精度に位置決めすることができる。一方、この大型カセットを単独で使用する記録再生装置では、カセットの側面部に近い第2の係止部を使って、カセットの横幅に近い広い間隔でカセットの平面的な姿勢を規制する事ができる。この様に、本発明は、2つのカセットを選択的に使用可能な記録再生装置、あるいは単独で使用する記録再生装置のどちらでも従来の方式に比べ高精度な位置規制ができるカセットを提供することができる。

【図面の簡単な説明】

【図1】本発明の実施の形態におけるLカセットの平面図

【図2】同Lカセットの外観平面、側面図及び正面図

【図3】同Lカセットの裏面図

【図4】同Lカセットの蓋ロック機構平面、側面図

【図5】同Lカセットのリールロック平面図

【図6】同Lカセットのリールロック動作時の断面図

【図7】同Lカセットのリールロック非動作時の断面図

【図8】同Lカセットのリールのリールテーブルへの係合時の側面図

【図9】同Lカセットのリールの側面図

【図10】同Lカセットの下ハーフの裏面図

【図11】図10の断面A-A、B-B、C-Cを示す

図

【図12】図10の断面D-Dを示す図

【図13】本発明の実施の形態におけるLカセットの蓋機構の側面図

【図14】本発明の実施の形態におけるLカセットの蓋機構の側面図

【図15】本発明の実施の形態におけるLカセットの蓋機構の側面図

【図16】同Lカセットの平面図

【図17】同Lカセットの蓋開放時の側面図

【図18】同Lカセットの半導体メモリ部の平面、側面図

【図19】同Lカセットのメモリ呼出、書込みのコネクタ装着の側面図

【図20】図19の正面図

【図21】図19の平面図

【図22】本発明の実施の形態におけるLカセットの上、下ハーフの斜視図

【図23】同Lカセットの蓋機構の斜視図

【図24】同Sカセットの外観平面、側面、正面図

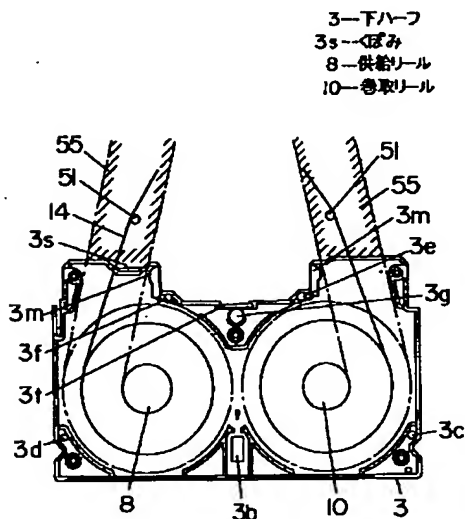
【図25】同Sカセットの裏面図

- 【図26】図25の断面G-G、H-Hを示す図  
 【図27】本発明の実施の形態におけるSカセットのリールロック平面図  
 【図28】同Sカセットのリールロック動作時の断面図  
 【図29】同Sカセットのリールロック非動作時の断面図  
 【図30】同Sカセットの蓋ロック機構平面、側面図  
 【図31】同Sカセットの蓋機構の側面図  
 【図32】同Sカセットの蓋機構の側面図  
 【図33】同Sカセットの蓋機構の側面図  
 【図34】同Sカセットの平面図  
 【図35】同Sカセットのリールのリールテーブルへの係合時の側面図  
 【図36】同Sカセットの半導体メモリ部の正面図  
 【図37】図36の側面図  
 【図38】本発明の実施の形態におけるS、Lカセットの平面図  
 【図39】同Sカセットの半導体メモリ部の斜視図  
 【図40】本発明の実施の形態におけるコネクタの斜視図  
 【図41】本発明の実施の形態におけるS、Lカセットのリールテーブルへの係合の側面図  
 【図42】同S、Lカセットの蓋開放機構平面図  
 【図43】同Lカセットの蓋開放軌跡の側面図  
 【図44】同Sカセットの蓋開放機構の側面図  
 【図45】同Sカセットの高さ位置決め機構の平面、側面図  
 【図46】同Lカセットの記録再生装置への適用の平面図  
 【図47】同Sカセットの記録再生装置への適用の平面図

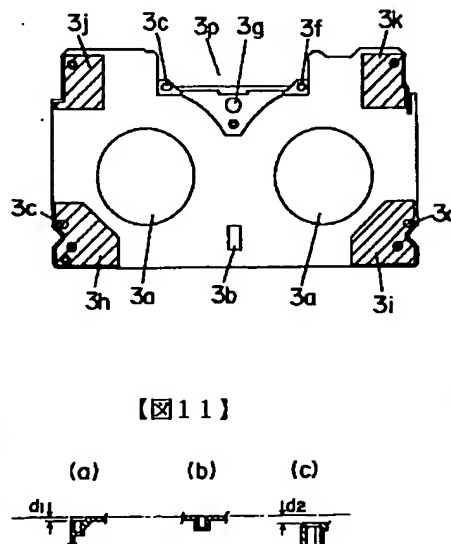
- 図  
 【図48】従来のテープカセットにおける蓋開閉部の側面図  
 【図49】従来のテープカセットにおける蓋開放完了の側面図  
 【図50】従来の大きさの異なる2つのテープカセットの記録再生装置への適用の平面図  
 【図51】従来のS、Lカセット配置裏面図  
 【図52】従来のテープカセットの前面蓋方向からの矢視図  
 【図53】本発明のLカセットをカセットホルダーに挿入した平面図  
 【図54】本発明のSカセットをカセットホルダーに挿入した平面図  
 【図55】本発明のLカセットをカセットホルダーに挿入した平面図  
 【図56】本発明の厚さの異なる2つのテープカセットの記録再生装置への位置決め構成図  
 【符号の説明】

- 20 1 Lカセット  
 2 上ハーフ  
 3 下ハーフ  
 3c、3d、3e、3f 位置決め孔  
 3x 第1の係止部、第2の係止部  
 3v、3×2 第2の係止部  
 31 Sカセット  
 33 下ハーフ  
 33c、33d、33e、33f 位置決め孔  
 33x、33v 係止部  
 30 75a、75b、75c 位置規制部

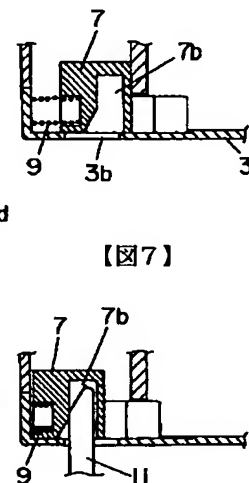
【図1】



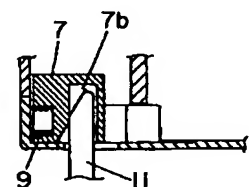
【図3】



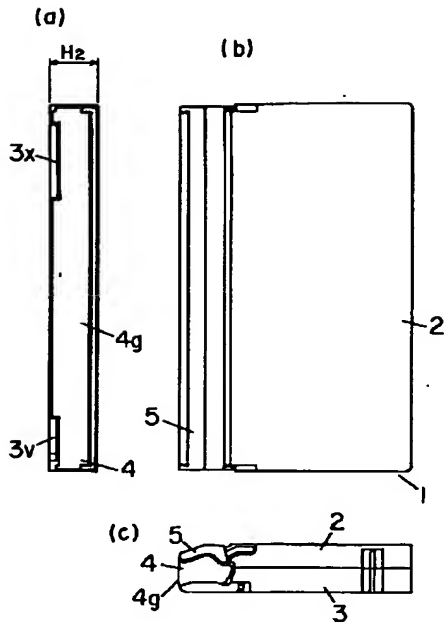
【図6】



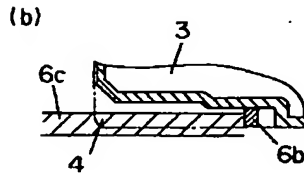
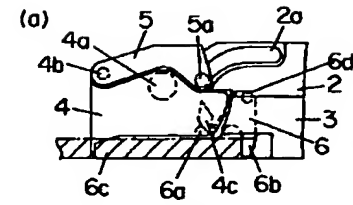
【図7】



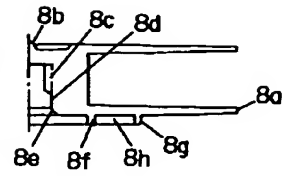
【図2】



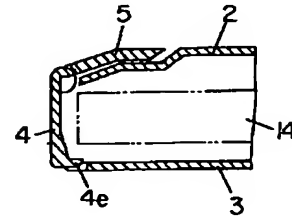
【図4】



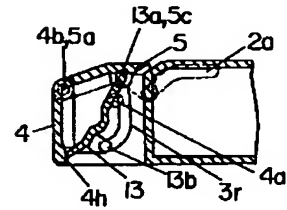
【図9】



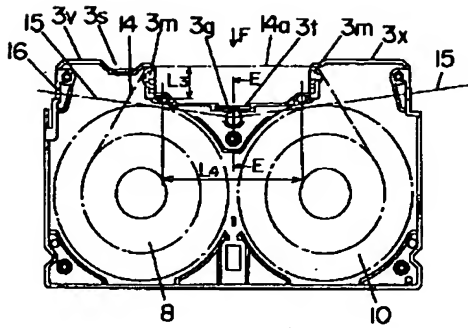
【図12】



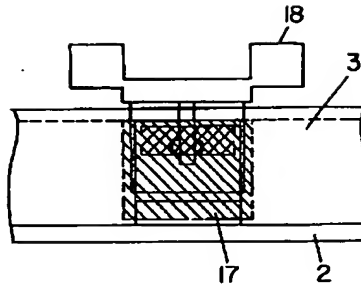
【図13】



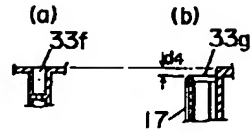
【図16】



【図20】

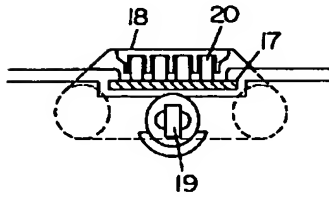


【図26】

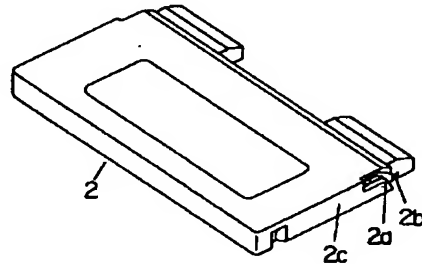


【図23】

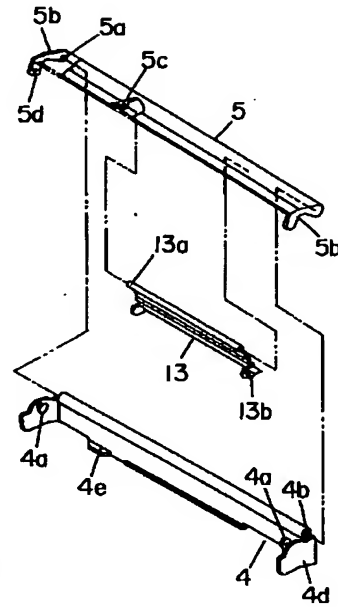
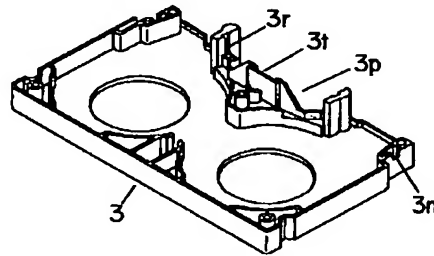
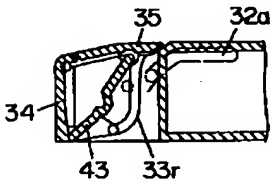
【図21】



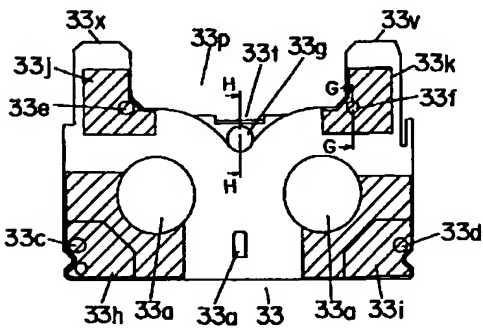
【図22】



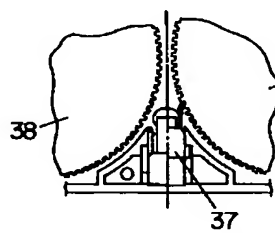
【図31】



【図25】

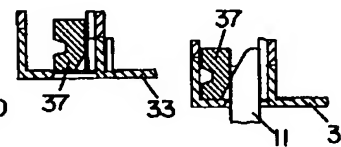


【図27】

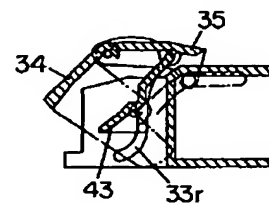


【図28】

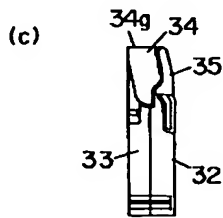
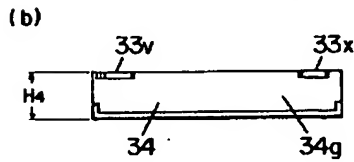
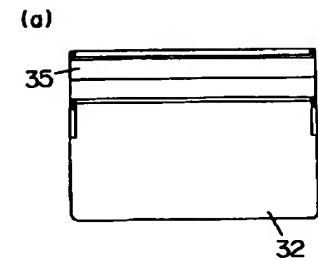
【図29】



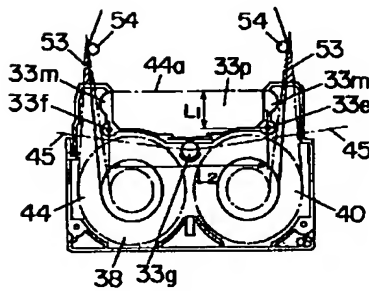
【図32】



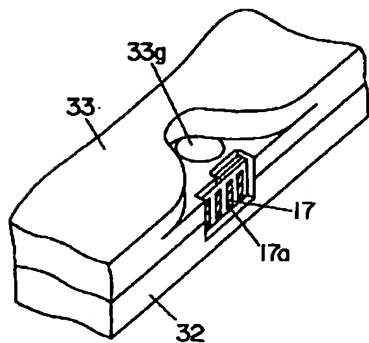
【图24】



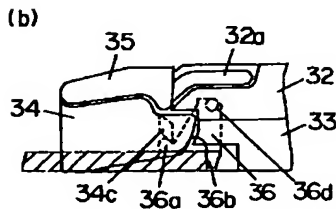
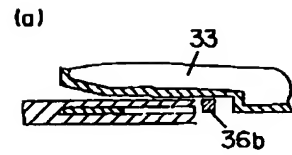
【例34】



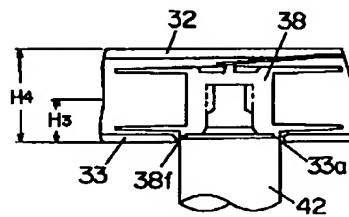
【图39】



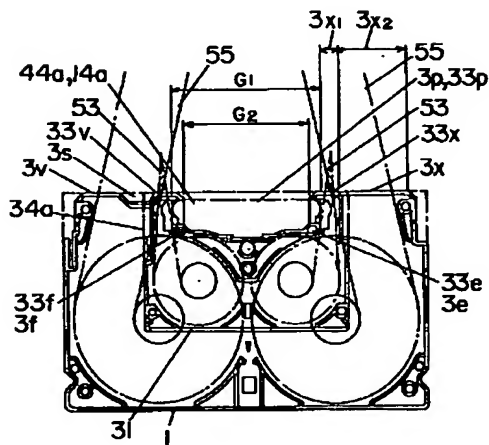
【図30】



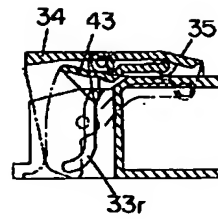
【图35】



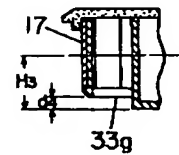
【图38】



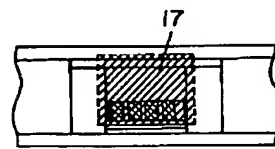
【图33】



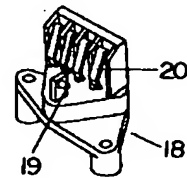
【图37】



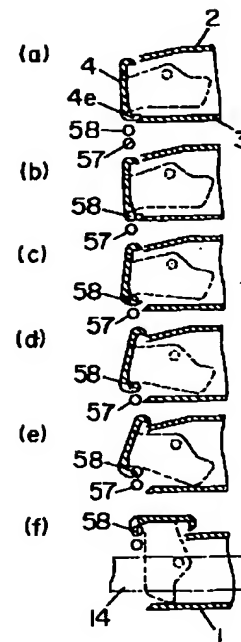
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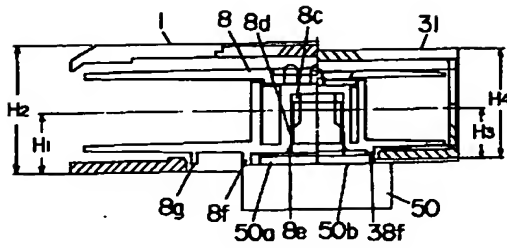
【図40】



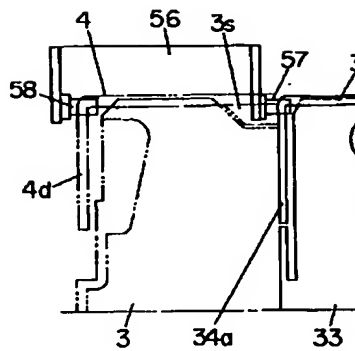
【図43】



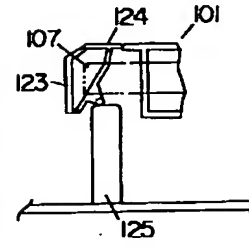
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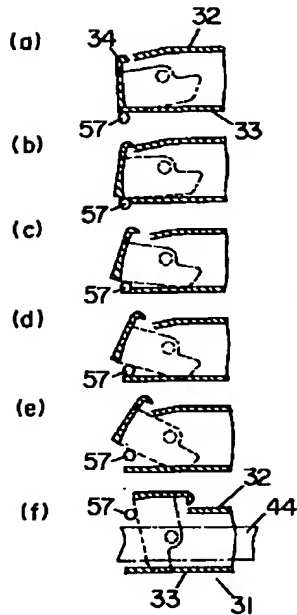
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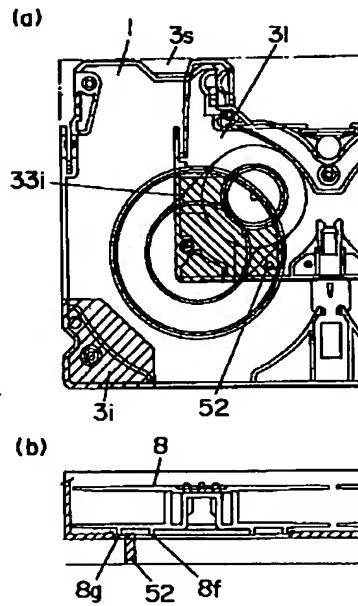
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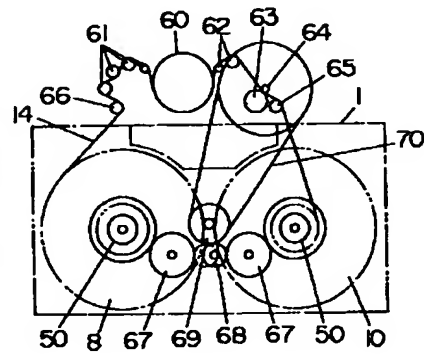
【図44】



【図45】

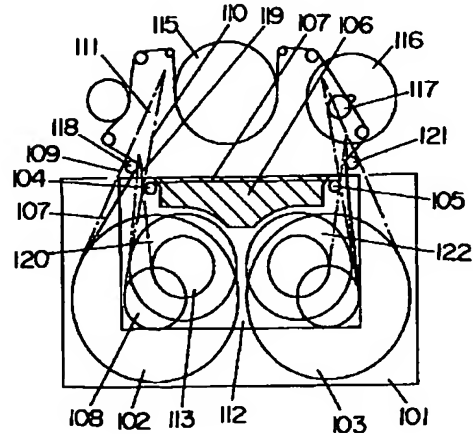


【図46】

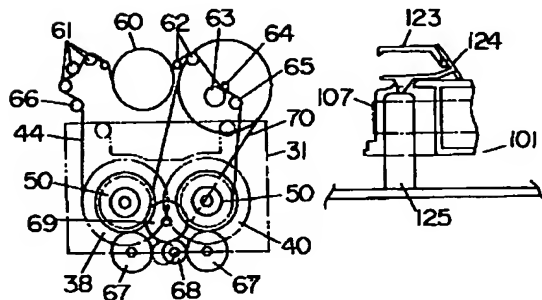


【図50】

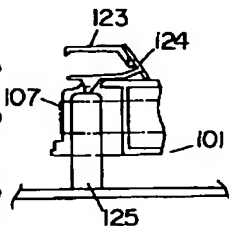
101--Mカセット  
102--供給リール(M)  
103--巻取リール(M)  
112--Sカセット



【図47】

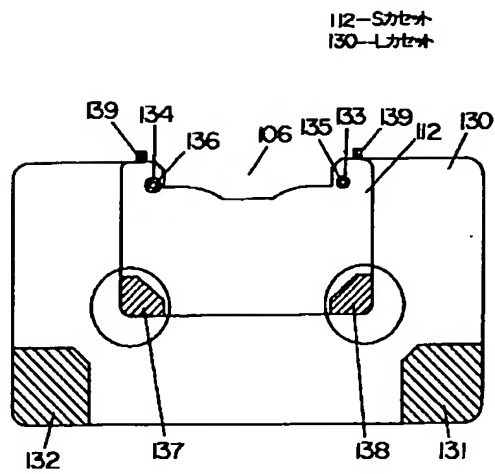


【図49】

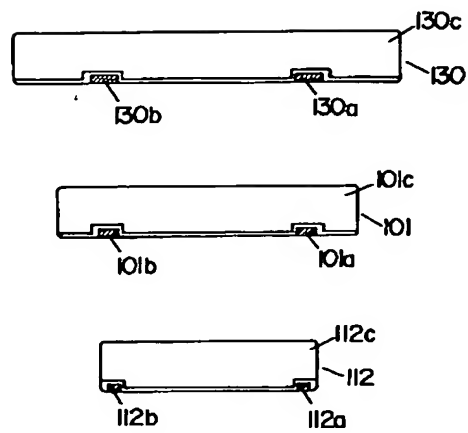




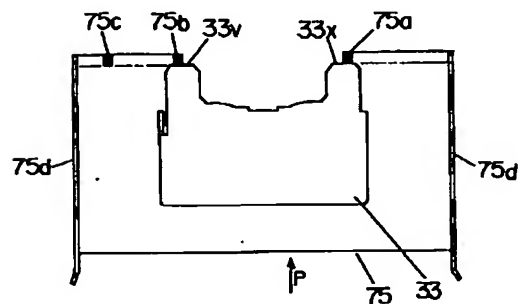
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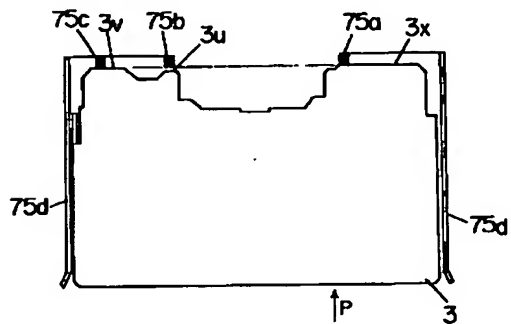
【図52】



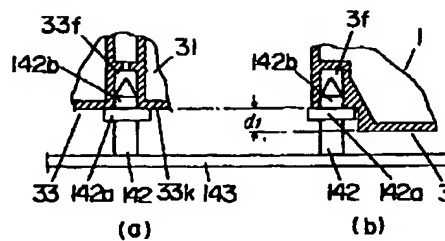
【図54】



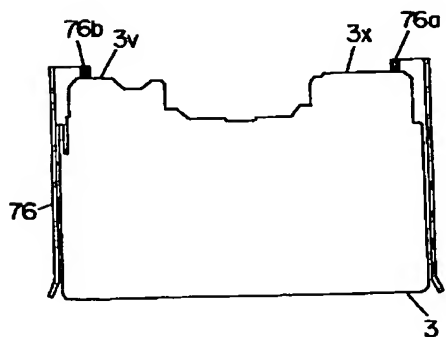
【図53】



【図56】



【図55】



フロントページの続き

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CLAIMS

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[Claim(s)]

[Claim 1] Two tooling holes in which the cassette positioning member which could equip like the record regenerative apparatus with which it is equipped with a small cassette, and was prepared in the aforementioned record regenerative apparatus is inserted, When it is a large-sized cassette with the stop section which contacts the cassette insertion specification-part material prepared in the aforementioned record regenerative apparatus and has arranged by making the two aforementioned tooling holes into two tooling holes and common positions of a small cassette, The one stop section of the two stop sections prepared in both the lateral portions of the small cassette which contacts the cassette insertion specification-part material of the aforementioned record regenerative apparatus by approaching is the tape cassette which constituted the 1st stop section in a common position, and two or more 2nd stop sections approached and prepared in cassette both lateral portions to the lower half.

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[Translation done.]

## \* NOTICES \*

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DETAILED DESCRIPTION

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[Detailed Description of the Invention]

[0001]

[The technical field to which invention belongs] this invention relates to the insertion regulation means to the record regenerative apparatus of two or more tape cassettes alternatively used for a record regenerative apparatus.

[0002]

[Description of the Prior Art] Before, in a magnetic recorder and reproducing device, though it is the same record format because of coexistence of the needs of record[ prolonged ]-izing, and the needs of a miniaturization and lightweight-izing, there is a system by which cassette sizes differ. For example, as a VTR for broadcast, "D3 format specification" is equivalent to the system. By this "D3 format specification", the cassette (S, M, L) by which three kinds of sizes differ is standardized.

[0003] The plan at the time of equipping a record regenerative apparatus with S cassette with the shortest chart lasting time and M cassette which has middle chart lasting time at drawing 50 is shown. The M cassette 101 has the supply reel 102 and a take up reel 103, and is \*\*\*\*(ing) the magnetic tape 107 in the front face by the guide post 104, 105 which stood erect to the cassette in the space of opening 106. the tape maximum wound diameter of the supply reel 102, and a reel -- the triangular field expressed with the tangent 109, 110 prolonged from the outer diameter of a hub 108 is the tape guidance field 111 which a magnetic tape 107 can draw out of cassette space by non-contact at the vertical cassette half of the M cassette 101. Therefore, you have to arrange the 1st post to which it shows the magnetic tape 107 which came out of the cassette so that a magnetic tape 107 may exist in this tape guidance field 111. The position of a tangent 109 is decided by composition of a vertical half's side attachment wall. on the other hand -- a tangent 110 -- a guide post 104 and a reel -- it is decided by the tangent which connects a hub 108

[0004] The size of opening 106 and the position of a guide post 104, 105 of the S cassette 112 are as common as the M cassette 101. moreover -- although other structures are almost the same as the M cassette 101 -- a limit of cassette size, and a reel -- from the physical relationship of a hub 113, the tape guidance field 119 of S cassette becomes small compared with the tape guidance field 111 of the M cassette 101, and is included by the tape guidance field 111 of the M cassette 101

[0005] Next, a record regenerative apparatus is alternatively equipped with such two cassettes, and the tape run system for performing record reproduction is explained. the rotary-head cylinder 115 -- a magnetic tape -- 180-degree winding -- high-speed rotation is carried out 116 is a capstan motor and 117 is a pinch roller. Since the magnetic tape 107 which came out of the supply reel 102 is wound around a post 118 in the tape guidance field 119 of the S cassette 112, it is shown even to a post 118 also to the magnetic tape 107 which came out of the supply reel 120 of the S cassette 112 by vertical half \*\*\*\*\* non-contact. Similarly, it is considered that it is also shown to arrangement of a post 121 to the magnetic tape 107 between a take up reel 103, a take up reel 122, and post 121 to all other objects non-contact.

[0006] As shown in drawing 48, the magnetic tape 107 which \*\*\*\*(ed) in the front face is covered with the front lid 123 and the back lid 124, and it is protected so that it may not be easily touched from the outside. This front lid 123 is held in this position by the lock member which it is energized in the direction closed by the elastic member, and is not illustrated. If a record regenerative apparatus is equipped, the lock by the lock member is canceled, an elastic member is resisted, and the front lid 123 will be rotated like drawing 49, and will expose a magnetic tape. open operation of this front lid 123 -- some back lids 124 -- opening -- make it open the back lid 124 wide, when the M cassette 101 descends in contact with a member 125 -- both the front lids 123 interlocked with this back lid 124 are opened wide

[0007] Thus, in the system which equips the same record regenerative apparatus with two or more kinds of tape cassettes, and carries out record reproduction, various devices are mutually made by each cassette. For example, it is made as [ become / a position common to the time of having arranged the tooling holes which insert the positioning member for positioning a cassette to equipment with high precision like drawing 50 ].

[0008] The rear-face view when making drawing 51 the L cassette 130 and the S cassette 112, making opening into a common position, and having arranged is shown. On both sides of opening 106, tooling holes 135 and 136 are formed in the L cassette 130 and the S cassette 112, respectively. 135 is the hole of a perfect circle and, as for tooling holes, 136 has become a long hole. The hatching area shown in the circumference of these tooling holes 135 and 136 shows the area in which the height receptacle of a cassette is possible. This is also common to L and S cassette. There is back broad hatching area 131 and 132 in the L cassette 130. This is also height receptacle area. There is height receptacle area of 137 and 138 in the S cassette 112 similarly. Since it is such composition, with the equipment which can equip with the S cassette 112 and the L cassette 130, a positioning member is arranged in the position equivalent to tooling holes 133 and 134.

[0009] In addition, this positioning member is made as [ receive / the height of a cassette / form the spittle equivalent to the height receptacle area 133 and 134, and ]. When equipped with the S cassette 112, a height receptacle pin is arranged in the position equivalent to 137 and 138, and when equipped with the L cassette 130, a height receptacle pin is arranged in the position equivalent to 131 and 132. Although the S cassette 112 and the L cassette 130 were explained, it is fundamentally the same also in the combination of the S cassette 112 and the M cassette 101, and the combination of the M cassette 101 and the L cassette 130.

[0010] Drawing seen to drawing 52 from each front lid of the S cassette 112, the M cassette 101, and the L cassette 130 is shown. 112a and 112b which are shown by hatching close to both the lateral portions of the S cassette 112 are a salient of the lower half who faces from notching of front lid 112c. the stop prepared in the record regenerative apparatus as these salients 112a and 112b were mostly exposed to the front face of front lid 112c and it was shown in drawing 51 -- the position of the S cassette 112 is regulated in contact with a member 139

[0011] That is, it is the position specification part of the cassette path of insertion when inserting in the cassette holder which takes out a cassette and is conveyed in a position and a record reproduction position. the salients 112a and 112b of the S cassette 112 -- a stop -- if it inserts to the position which contacts a member 139, the rest will convey a cassette to a position by the motor etc. automatically this stop -- the position in the cassette holder of a cassette is regulated by contact of a member 139 and Salients 112a and 112b -- it divides and comes out Salients 101a, 101b, 130a, and 130b have faced from notching of the front lids 101c and 130c also like the M cassette 101 and the L cassette 130. Although the sizes of a cassette differ, the position of this salient is located in the almost same position. this is shown in drawing 51 -- as -- the stop -- it is because there is a merit that a member 139 can be used in common

[0012]

[Problem(s) to be Solved by the Invention] Thus, although carrying out a salient position in common has the merit that it is single and the position specification-part material stopped to the salient can be constituted, a common position is decided by S cassette by which cassette sizes differ. It will carry out by two close to the lateral portion of S cassette which separated if possible. Although this is fully two latus, S cassette will sufficiently be hard to say it as latus compared with cassette size, if it sees from L cassette with the largest size.

[0013] Therefore, if the relative position of the cassette path of insertion of these two position specification-part material shifts, a cassette will take the posture superficially rotated to either to the right position. As a result, the position of various component parts of a cassette produces a gap from the right position.

[0014] Thus, the problem of not going into the hole for release of the reel lock release member by which a positioning member is not inserted in the tooling holes of a cassette even if only anything will control conveyance of a cassette holder with high precision, if a gap arises arises. Composition to which positioning of the cassette by position specification-part material is carried out with high precision from such a viewpoint is called for as a cassette. Compared with cassette breadth, as for L cassette, varying greatly compared with the cassette of others [ cassette / L / position / the ], since the interval of a height is narrow is expected.

[0015] The technical problem of this invention is in two or more cassettes alternatively used for this appearance with the same equipment, and I hear that the variation in the position within the cassette holder of a record regenerative apparatus is large, and cannot position a cassette correctly to a record regenerative apparatus, and it has it. Then, the purpose of this invention offers the cassette composition which is in each cassette and can perform position control within a cassette holder with high precision.

[0016]

[Means for Solving the Problem] Since the 2nd stop section is prepared in the position where the means of this invention approached both the lateral portions of a large-sized cassette in the stop section of a large-sized cassette while preparing the 1st stop section in the stop section of a small cassette, and the common position in order to solve this technical problem, if a large-sized cassette is positioned using this 2nd stop section, even if it will be the same mechanism precision, the interval can control a position by latus' to high degree of accuracy.

[0017]

[Embodiments of the Invention] Two tooling holes in which the cassette positioning member which could equip with invention of this invention according to claim 1 like the record regenerative apparatus with which it is equipped with a small cassette, and was prepared in the aforementioned record regenerative apparatus is inserted, When it is a large-sized cassette with the stop section which contacts the cassette insertion specification-part material prepared in the aforementioned record regenerative apparatus and has arranged by making the two aforementioned tooling holes into two tooling holes and common positions of a small cassette, The 1st stop section in the position where the one stop section of the two stop sections prepared in both the lateral portions of the small cassette which contacts the cassette insertion specification-part material of the aforementioned record regenerative apparatus by approaching is common, It is the tape cassette which constituted two or more 2nd stop sections approached and prepared in cassette both lateral portions to the lower half. If the specification-part material stopped in the 2nd stop section prepared in the cassette holder by approaching both the lateral portions of a large-sized cassette is prepared even if it is the case where two or more cassettes are alternatively used for the same equipment, a large-sized cassette can do positioning very with high precision.

[0018] (Gestalt 1 of operation) The gestalt of operation is explained with a drawing below. in addition, the long tape cassette (L cassette is called below.) of chart lasting time and the short small tape cassette (S cassette is called below.) of chart lasting time -- both, although only right-and-left one side is illustrated, as long as there is no notice, it is the composition of a bilateral symmetry

[0019] Drawing 2 (a), (b), and (c) are the appearance plans, the side elevations, and front view of the L cassette 1. The L cassette 1 mainly consists of the upper half 2, a lower half 3, a front lid 4, and a canopy 5. Drawing 3 is the rear-face view of drawing 2. the reel which a reel exposes to the lower half 3 -- hole 3a and a reel lock -- hole 3b, tooling holes 3c-3f, and always -- the object for edge Light Emitting Diode -- 3g of holes is constituted Moreover, near the four corners of the L cassette 1, the hatching sections 3h-3k are independent respectively, and are prepared four places in the height receptacle area (the support section is called below) used as cassette height criteria. These four support sections 3h-3k show the range which can arrange the cassette height arrangement pin prepared in a record regenerative apparatus.

[0020] Although the tooling holes 3e and 3f which are ahead are in the position which it was prepared in both the sides of the space of opening 3p, and was estranged from the four support sections, moreover, the tooling holes 3c and 3d which are back are formed in the position very near cassette both lateral portions within the limits of the two support sections 3h and 3i in the four above-mentioned support sections.

[0021] Drawing 10 is the lower half's 3 rear-face view and an A-A cross section [ in / drawing 10 / in drawing 11 (a) ], a B-B cross section / in / drawing 10 / in drawing 11 (b) ], and a C-C cross section / in / drawing 10 / in drawing 11 (c) ] like drawing 3. the position where only d1 became depressed from it as tooling holes 3e and 3f were shown in drawing 11 (a) although tooling holes 3c and 3d were constituted by the maximum inferior-surface-of-tongue section (line shown with an alternate long and short dash line) used as the support section as shown in drawing 11 (b) -- always -- the object for edge Light Emitting Diode -- 3g of holes is constituted from d1 by the position where a hollow is still larger and which became depressed d2

[0022] Although opening 3p is mentioned later for details, the space wide opened on the base of the bottom half 3 of a cassette as shown also in the lid opening view of drawing 15 is open for free passage to the upper half's 2 upper surface section.

[0023] Although drawing 13 is in the state which the lid closed, behind the back lid 13 (space of the direction in which cam-groove 3r is formed), space is similarly formed to near the upper half's 2 upper surface in this state. Therefore, it is satisfactory, even if only d1 becomes depressed and the tooling holes 3e and 3f in this opening 3p space constitute it, as shown in drawing 11 (a). moreover -- the same -- always -- the object for edge Light Emitting Diode -- as 3g of holes shows drawing 11 (c), even if it hollows only d2, others are not affected at all

[0024] Moreover, as shown in drawing 10, the existing tooling holes [ 3e and 3f ] hollow forms the sufficiently bigger field than the tooling holes [ 3e and 3f ] aperture. positioning which has the height arrangement section of S cassette although this mentions later -- in order to avoid interference with the major-diameter section of a member, the hollow consists of big fields a little Although tooling holes 3d and 3f are holes of a perfect circle, 3c and 3e are a long hole configuration. The magnetic tape 14 which had the start edge and termination stopped by the supply reel 8 and the take up reel 10 as shown in drawing 16 is wound and guided 3m inside the tape proposal constituted by the lower half's 3 front face.

[0025] Correspondence with the run system of the L cassette 1 is shown in drawing 1. The interior 55 of a tape proposal currently displayed by hatching is the field to which it shows a magnetic tape, and it must arrange the post 51 of a record regenerative apparatus so that the magnetic tape 14 which ON-comes out of and which is carried out may go into this field. If it does so, since a magnetic tape 14 results in the post 51 of a run system, it can carry out a tape run very with high precision, without contacting no parts of a cassette from the supply reel 8 and a take up reel 10.

[0026] A reel lock mechanism is shown in drawing 7 from drawing 5. A right half shows the brake-on state where the reel lock presser foot stitch tongue 7 engaged with claw part 10a of a take up reel 10 the brake-off state where the reel lock presser foot stitch tongue 7 estranged the left half of drawing 5 from the supply reel 8. Drawing 6 shows the cross section of Brake on, and drawing 7 shows the cross section of Brake off. Usually, since the reel lock presser foot stitch tongue 7 is energized in the direction of a reel with the spring 9, as shown in the drawing 5 right half, claw part 7a at a nose of cam engaged with claw part 10a of a take up reel 10, and it has forbidden rotation of a take up reel 10.

[0027] In addition, the take up reel 10 has composition which is easy to rotate clockwise that it is hard to rotate counterclockwise for the mechanism which rolls round a tape, when rotating clockwise. In the case of the supply reel 8, it becomes the reverse. the reel lock prepared for the lower half 3 of a cassette who shows the reel lock presser foot stitch tongue 7 to drawing 3 -- a hole -- 3b position -- caudad -- opening -- crevice 7b is prepared the bottom When the shaft 11 of a record regenerative apparatus advances into this crevice 7b, as shown in drawing 7, a spring 9 is resisted, the reel lock presser foot stitch tongue 7 retreats, claw part 7b of the reel lock presser foot stitch tongue 7 is estranged from claw part 8a of the supply reel 8, or claw part 10a of a take up reel 10, and rotation of each reel is attained.

[0028] Next, drawing 8 and 9 explain the structure of the supply reel 8. A vertical flange is really constituted by the supply reel 8, and the above-mentioned claw part 8a is prepared in it at the lower flange periphery section. It is caudad energized with the reel presser-foot spring (not shown) prepared for the upper half 2 by heights 8b of the reel central upper part. Drawing 8 shows the engagement state of the supply reel 8 and the reel table 12 prepared in the record regenerative apparatus. Two or more wing section 12a opened to the method of the outside established in the point of the reel table 12 engages with wing section 8c prepared like the supply reel 8, and has the reel table 12 and composition rotated to one.

[0029] As shown in drawing 9, 8d of bodies is constituted by the lower part of wing section 8c of the supply reel 8, and cone section 8e is constituted by the lower part. 8d of bodies makes a rotation deflection the minimum, when it engages with the reel table 12, and centering with the reel table 12 is performed and the supply reel 8 rotates. Moreover, cone section 8e is the interior of a proposal for making smooth engagement of the supply reel 8 and the reel table 12. 8f of reel receptacle sections of the annular height which contacts the reel table 12 at the inferior-surface-of-tongue section of the supply reel 8, and the reel prepared for the lower half 3 with concentric circle composition -- a hole -- 8g of reel attaching parts which consist of an annular height

slightly smaller than 3a is constituted Between these two 8f of reel receptacle sections which are an annular height and 8g of reel attaching parts, as shown in drawing, 8h of annular crevices is constituted. the state with the reel table 12 where it is not engaged -- the position of the supply reel 8 -- this lower half's 3 reel -- a hole -- it is regulated by fitting with 8g of reel attaching parts of 3a and the supply reel 8

[0030] Wrap lid composition consists of a canopy 5, a back lid 13, and a front lid 4 magnetic tape 14a \*\*\*\*(ed) by the front face shown in drawing 16, as shown in drawing 13. Each composition is explained referring to the appearance perspective diagram of each lid shown in drawing 23. Shaft 4a prepared in 4d of sides is inserted into 3n of notching sections of notching section 2b of the upper half 2 who shows drawing 22, and the lower half 3, and the front lid 4 is supported free [ rotation ], and is energized with the spring which is not illustrated counterclockwise (direction which closes a lid). engagement of the ends of the front lid 4 -- shaft 5a prepared in side 5b of a canopy 5 is supported by hole 4b free [ rotation ] furthermore, the center of a canopy 5 -- alike -- support -- a hole -- 5c forms -- having -- \*\*\*\* -- this support -- a hole -- shaft 13a of the back lid 13 can be engaged by 5c, and the back lid 13 can rotate freely

[0031] Engagement guidance of the 5d of the shafts of another side of a canopy 5 is carried out at guide slot 2a formed in lateral portion 2c of the upper half 2 who shows drawing 22 and drawing 13. Moreover, engagement guidance of the guide shaft 13b of the back lid 13 is carried out at cam-groove 3r formed in the lower half's 3 opening 3p side.

[0032] As explained above, if the front lid 4 is rotated, a canopy 5, the back lid 13, and the front lid 4 stand in a row in it, and since it is the composition which interlocks and is guided at the upper half 2 and the lower half 3, a canopy 5 and the back lid 13 will be guided at cam-groove 3r and guide slot 2a, and will move them back.

[0033] Drawing 15 explains the switching action of this lid mechanism from drawing 13. By making the lid opening member (not shown) of a record regenerative apparatus contact 4d of a part of lateral portions of the front lid 4, and dropping a tape cassette relatively, the front lid 4 rotates clockwise focusing on shaft 4a. Along with it, a canopy 5 moves to an upper half's upper part behind along with guide slot 2a. Moreover, the back lid 13 also moves upwards along with cam-groove 3r. If the front lid 4 rotates 90 abbreviation, magnetic tape 14a which \*\*\*\*(ed) in the front face like drawing 15 will be exposed.

[0034] The D-D cross section of the lower half 3 who shows drawing 10 is shown in drawing 12 also including a lid mechanism. The stop sections 3v and 3x projected most are prepared for the lower half 3 on both sides of opening 3p at both sides, respectively. Stop section 3x are a latus range compared with 3v. These stop section 3x are divided into the stop section 3x1 and its 3 x2 out of range of the range in which S cassette exists when it has arranged in piles with the S cassette 31 mentioned later ( drawing 38 ). as for 3v, the S cassette 31 exists -- it is out of range

[0035] Stop section 3v in this position that was out of range and approached the lateral portion of the L cassette 1, and 3 x2 is 3x1 ] the 1st stop section in the 2nd stop section (3v and 3x only call the stop section henceforth). From the front lid 4, it exposes and these stop sections 3v and 3x are formed, as shown in drawing 2 (a), and they serve as the same field mostly with 4g of surface sections of the front lid 4.

[0036] The stop sections 3v and 3x contact the cassette position specification-part material prepared in the cassette holder (not shown) of a record regenerative apparatus, and perform position regulation of the cassette in a cassette holder. The lid stop sections 3u and 3w prepared in the position which became depressed only on both sides of opening 3p at both sides like the stop sections 3v and 3x consist of the stop sections 3v and 3x. These lid stop sections 3u and 3w contact 4h (refer to drawing 13 ) of rear-face sections of the front lid 4, and they secure the sealing nature of a front lid and the cassette by the lower half while they determine a posture when the front lid 4 closes.

[0037] In addition, the composition of the lid stop sections 3u and 3w, the stop sections 3v and 3x, and the front lid 4 which were explained above, and its view are already adopted on VHS or the 8mm videocassette. Furthermore, the lower half 3 has prepared 3s of impressions where only d3 became depressed rather than stop section 3v in the position inserted into lid stop section 3u and stop section 3v. With the front lid 4, as shown in drawing 23, magnetic tape 14a was added to 4f of front-face sections of a wrap, and 4d of both lateral portions, and height 4e which is an parallel flat surface is provided in the same height as the lower half 3 corresponding to the 3s of the aforementioned impressions. Therefore, since 3s of this impression is covered by height 4e of the front lid 4, it does not spoil sealing nature. As shown in drawing 16, 3s of this impression also has that are out of the magnetic tape path from the supply reel 8 to a take up reel 10, and the open air touches [ little ] a magnetic tape directly.

[0038] Drawing 4 is drawing showing a lid lock mechanism. Drawing 4 (b) is a plan and shows the front lid 4 with a fictitious outline. Drawing 4 (a) is a side elevation. The lid lock presser foot stitch tongue 6 formed in the lower half's 3 side free [ rotation ] centering on 6d of shafts is clockwise energized with the spring which is not illustrated. Therefore, salient 4c of the front lid 4 and claw part 6a of the lid lock presser foot stitch tongue 6 are engaged, and rotation of the clockwise rotation of the front lid 4 is forbidden. Since salient 6b of this lid lock presser foot stitch tongue 6 is constituted so that it may expose from some lower halves 3, and the front of this salient 6b of the lower half 3 is cut and lacked, Without interfering with a cassette, if a release member (not shown) is made to advance from a record regenerative apparatus within the limits of hatching section 6c shown in drawing, salient 6b of this lid lock presser foot stitch tongue 6 is contacted, a spring can be resisted and the lid lock presser foot stitch tongue 6 can be rotated counterclockwise. Consequently, a lock is canceled and the front lid 4 can be clockwise rotated focusing on shaft 4a.

[0039] The detection optical path 15 for detecting the tape start edge and termination is expressed to drawing 16. the object for the lower half's 3 always edge Light Emitting Diode -- the light emitting device prepared in the record regenerative apparatus is inserted in 3g of holes, and a rim end and termination can be detected by arranging a photo detector in the position besides the cassette on an optical path, respectively although drawing 17 is in a lid opening state -- the lower half's 3 lateral portion -- an

optical path -- a hole 16 is formed and an optical path is formed between a photo detector and a light emitting device this optical path -- a hole 16 -- the front lid 4 -- opening -- the state where exposed like drawing 17 and the front lid 4 has closed the bottom only at the time -- 4d of sides of the front lid 4 -- an optical path -- since a hole 16 is closed, sealing nature is securable [0040] Next, the function which delivers and receives the information recorded on the tape between a record regenerative apparatus and a cassette is explained. The E-E cross section of drawing 16 is shown in (b) of drawing 18, and F view view is shown in drawing 18 (a). 17 is a memory P board and is equipped with four terminal 17a which delivers and receives the signal of semiconductor memory and the exterior. This memory P board 17 is inserted and held from the upper part at 3t of slit sections prepared for drawing 16 and the lower half 3 who shows 22, and it escapes from it by the upper half 2, and it constitutes prevention. 3t of this slit section is wide opened by the opening 3p side, and the above-mentioned terminal 17a has exposed it to this opening 3p side. the back of the memory P board 17 -- always -- the object for edge Light Emitting Diode -- 3g of holes is constituted

[0041] Drawing 19 - drawing 21 express the contact situation of the connector for signal transfer, and the memory P board 17 prepared in the record regenerative apparatus. Although the appearance is shown in drawing 40, a connector 18 consists of a light emitting device 19 and the connector terminal 20 of the shape of four flat spring, and it fixes to a record regenerative apparatus and it is prepared. Four connector terminals 20 have the clockwise energization force by drawing 19, and touch terminal 17a of the memory P board 17 with the respectively fixed contact pressure. Therefore, the writing of the information on the semiconductor memory of the memory P board 17 and read-out become possible through this terminal 17a.

[0042] The position of terminal 17a is located under the memory P board 17, and the load rate of terminal 17a is made small by taking a large distance of contact 20b of flexion 20a of the connector terminal 20, and terminal 17a. That is, also by dispersion in the relative position of a cassette and a connector 18, there is little change of the contact pressure of the connector terminal 20 to the memory P board 17, and a highly reliable contact arrangement can be secured with the stable contact pressure. The connector terminal 20 was constituted in the U character type, and wearing of a cassette and ejection operation made flexion 20a the upper part, and it is for protecting so that the force with the connector terminal 20 impossible for may be added and a connector terminal may not cause deformation.

[0043] The L cassette 1 explained above and S cassette which has compatibility are explained. They are drawing 24 (a), (b), (c), the appearance plan of the \*\* S cassette 31, a side elevation, and front view. The S cassette 31 mainly consists of the upper half 32, a lower half 33, a front lid 34, and a canopy 35 like the L cassette 1. Moreover, the S cassette 31 has short chart lasting time, and its flat-surface size of a cassette is also smaller than the L cassette 1. Also in thickness, the thickness H4 of the S cassette 31 has a relation called  $H2 > H4$  to the thickness H2 of the L cassette 1.

[0044] Drawing 25 is the rear-face view of drawing 24. The stop sections 33v and 33x are prepared for the lower half 33 on both sides of opening 33p at both sides, respectively. From the front lid 34, it exposes and these stop sections 33v and 33x are formed, as shown in drawing 24 (b), and they serve as the same field mostly with 34g of surface sections of the front lid 34. The stop sections 33v and 33x contact the cassette position specification-part material prepared in the cassette holder (not shown) of a record regenerative apparatus, and perform position regulation of the cassette in a cassette holder.

[0045] further -- the lower half 33 -- a reel -- hole 33a and a reel lock -- hole 33b, tooling holes 33c-33f, and always -- the object for edge Light Emitting Diode -- 33g of holes is constituted Moreover, near the four corners of the S cassette 31, the hatching sections 33h-33k are independent respectively, and are prepared four places in the height receptacle area (the support section is called below) used as cassette height criteria. These four support sections 33h-33k show the range which can arrange the cassette height arrangement pin prepared in a record regenerative apparatus. The tooling holes 33e and 33f which are ahead are formed in both the sides of opening 33p, and are within the limits of the support sections 33j and 33k.

[0046] The tooling holes 33c and 33d which are back on the other hand are also within the limits of the support sections 33h and 33i. These tooling holes 33c and 33d are formed in the position very near both the lateral portions of the S cassette 31 like the tooling holes 3c and 3d of the L cassette 1. A G-G cross section [ in / drawing 25 / in drawing 26 (a) ] and drawing 26 (b) are the H-H cross sections in drawing 25. although tooling holes 33c-33f are constituted by the maximum inferior-surface-of-tongue section (line shown with an alternate long and short dash line) used as the support section -- always -- the object for edge Light Emitting Diode -- 33g of holes is constituted by the position where only d4 became depressed Since the diameters of the tape maximum volume differ, as for the tape center height H1 from the maximum inferior-surface-of-tongue section of the lower half 3 of the L cassette 1 shown in drawing 8 and drawing 35, and the tape center height H3 from the maximum inferior-surface-of-tongue section of the lower half 33 of the S cassette 31, the direction of the L cassette 1 is large with the whole cassette thickness like  $H1 > H3$ . In such composition, the size relation of the cassette thickness direction of the L cassette 1 and the S cassette 31 is as follows.

[0047]  $H1 - d1 = H3$  ..... (1)

$H1 - d2 = H3 - d4$  ..... (2)

(1) \*\*\*\* in which, as for the existing tooling holes [ of the L cassette 1 / 3e and 3f ] flat surface, the tooling holes 33c-33f of the S cassette 31 and the hatching sections 33h-33k exist when a formula considers two cassettes on the basis of a tape center -- it is shown that it is the flat surface of the same height as the lower half's 33 so-called maximum inferior-surface-of-tongue section Positioning support of the S cassette 31 and the L cassette 1 by which thickness differs as shown in drawing 41 is carried out so that a tape center may serve as the same height. Then, I hear that the height of the existing tooling holes [ of the L cassette 1 constituted by the lower half 3 / 3c and 3d ] flat surface, i.e., a hollow, is equal to the maximum inferior-surface-of-tongue section of the lower half 33 of the S cassette 31 exactly, and there is.



[0048] It explains to a detail further using drawing 56. Drawing 56 (a) is drawing where the gage pin 142 is engaging with 33f (the same is said of 33e of course) of tooling holes of the S cassette 31. The gage pin 142 is implanted in the chassis 143, and consists of positioning section 142b which is the same diameter as the diameter of 33f of tooling holes, and cassette receptacle section 142a [major diameter / path / the ] /. Cassette receptacle section 142a is in contact with the lower half 33 of the S cassette 31, and has specified the height of the S cassette 31 by this cassette receptacle section 142a. Since 33f of these tooling holes exists within the limits of support section 33k, this cassette receptacle section 142a will hold the S cassette 31 correctly in contact with support section 33k.

[0049] On the other hand, drawing 56 (b) is drawing where the L cassette 1 is positioned by the same gage pin 142. As mentioned above, when the L cassette 1 is considered on the basis of a tape center, a cassette base is located by only H1-H3=d 1 in a low position. Since only the bottom half d1 of a cassette also becomes depressed and constitutes the hollow of the tooling holes 33f and 33e of the L cassette 1 from 33, when a gage pin 142 is made to engage with 33f of these tooling holes, as shown in drawing (b), the upper surface will become depressed and cassette receptacle section 142a will specify the height of the L cassette 1 in contact with a field. Cassette receptacle section 142a should just set up a path so that the outer-diameter section may not interfere in the side attachment wall of a hollow.

[0050] (2) the time of a formula considering two cassettes on the basis of a tape center -- the object for always edge Light Emitting Diode of the L cassette 1 -- the object for always edge Light Emitting Diode of the existing flat surface of 3g of holes, and the S cassette 31 -- it is shown that the existing flat surface of 33g of holes is a flat surface of the same height

[0051] Since the field inside [ 53 ] the tape proposal shown by drawing 34 is the same as 55 shown by drawing 1, you have to form a post 54 so that a magnetic tape may be guided to this field. The magnetic tape 44 which had the start edge and termination stopped by the supply reel 38 and the take up reel 40 is wound and guided 33m inside the tape proposal constituted by the lower half's 33 front face. The same distance L3 of the L cassette 1 shown in magnetic tape 44a \*\*\*\*(ed) among these interior of tape proposal 33m, the above-mentioned tooling-holes 33e, the distance L1 between 33f, and drawing 16 is the same.

[0052] Moreover, tooling-holes 33e of the S cassette 31 and the distance L2 between 33f are the same as tooling-holes 3e of the L cassette 1, and the distance L4 between 3f. It will be said that this thing can share the gage pin by the side of a record regenerative apparatus by the L cassette 1 and the S cassette 31. Consequently, the magnetic tapes 4a and 44a which \*\*\*\* in a front face serve as the same position like drawing 38.

[0053] Naturally at this time, the tooling holes 33c and 33d prepared behind the tooling holes 3c and 3d prepared behind the L cassette 1 and the S cassette 31 differ in a position. Moreover, since it has prepared near the lateral portion of a cassette, respectively and the sizes of a cassette also differ, the relative-position relation of both tooling holes does not serve as an equal.

[0054] Although a reel lock mechanism is shown in drawing 29 from drawing 27, since it is the same composition as the reel lock mechanism of the L cassette 1, fundamentally, explanation of composition is omitted. here -- the reel lock of the S cassette 31 -- a hole -- the reel lock of 33b and the L cassette 1 -- a hole -- 3b, since the positions differ when it has arranged like drawing 38 since it constitutes so that it can cancel by the member of the same configuration although it cannot respond to both cassettes by the member fixed to the record regenerative apparatus -- reel lock release of the L cassette 1 -- the shaft 11 which is a member was made into working, and it considered as the composition of which the reel lock of the S cassette 31 can also be canceled

[0055] Although the structure of the supply reel 38 is expressed to drawing 35, since reel structure is the same as the supply reel 8 of the L cassette 1, fundamentally, only a different portion explains. 38f of reel receptacle sections of the annular salient which contacts the reel table 42 is prepared in the inferior-surface-of-tongue section of the supply reel 38. although 8g of reel attaching parts was constituted from concentric circle composition with 8f of reel receptacle sections by the L cassette 1 -- the slightly larger reel only as 38f of this reel receptacle section by the S cassette 31 than 38f of reel receptacle sections -- a hole -- constituting 33a -- the position of the supply reel 38 -- this lower half's 33 reel -- a hole -- it has regulated by fitting with 38f of reel receptacle sections of 33a and the supply reel 38

[0056] Drawing which equipped the same reel table 50 with the L cassette 1 and the S cassette 31 at drawing 41 is shown. In drawing 41, the engagement state of the S cassette 31 and the reel table 50 and left-hand side show the engagement state of the L cassette 1 and the reel table 50 to right-hand side. The S cassette 31 and the L cassette 1 are the same composition, and can engage with the reel table 50, and wing section 8c, 8d of bodies, and cone section 8e can transmit turning effort. By the L cassette 1 and the S cassette 31, since the height from a tape center to a lower half differs as mentioned above, as the reel receptacle sections 3f and 38f of each cassette are also shown in drawing, it differs.

[0057] 38f of however, reel receptacle sections of the S cassette 31 considering as the minor diameter rather than 8f of reel receptacle sections of the L cassette 1, since the height of 8f of reel receptacle sections of the L cassette 1 is further made lower than the maximum inferior-surface-of-tongue section of the lower half 33 of the S cassette 31 The reel receptacle sections 38f and 8f are contacted in the reel table 50, respectively, and reel \*\*\*\*\* 50a and 50b which guarantee the height of each reel can be constituted independently.

[0058] Next, although lid composition and lid-open close operation are shown in drawing 31 - drawing 33, it consists of a canopy 35, a back lid 43, and a front lid 34 like the L cassette 1. although it is the same as the L cassette 1 which also shows appearance composition to drawing 23 -- \*\*\*\*\* -- \*\* is structure shown in drawing 12 Although it became depressed to the lower half 3, 3s was prepared and salient 4e was further prepared in the front lid 4 in part by the L cassette 1 corresponding to it There is no height 4e as which the comparison section of the front lid 34 and the lower half 33 is regarded by the L cassette 1 by the S cassette 31. The front lid 34 has the shape of a typeface of abbreviation KO which consists magnetic tape 44a of 44f of the front-face sections of a wrap, and 44d (it is the same as 4d of lateral portions of the front lid 4 of the L cassette 1 although not

illustrated) of lateral portions.

[0059] Drawing 30 is drawing showing a lid lock mechanism. (a) is a plan and (b) is a side elevation. Since a lid lock mechanism is also the same composition as the L cassette 1, detailed explanation is omitted.

[0060] The detection optical path 45 for detecting the tape start edge and termination is expressed to drawing 34. the object for the lower half's 33 always edge Light Emitting Diode -- the light emitting device prepared in the record regenerative apparatus is inserted in 33g of holes, and a rim end and termination can be detected by arranging a photo detector in the position besides the cassette on an optical path, respectively drawing 17 -- the lid-open close one of the L cassette 1, and an optical path -- although opening and closing of a hole 16 were explained, the S cassette 31 is also the same composition

[0061] Drawing 36, and 37 and 39 show the maintenance mechanism of the memory P board 17. (2) the formula explained -- as -- criteria [ center / tape ] -- carrying out -- the object for always edge Light Emitting Diode of the L cassette 1 and the S cassette 31 -- the existing Holes / 3g and 33g / flat surface is in the same height always [ this ] -- the object for edge Light Emitting Diode -- the position of the memory P board 17 of the height relation from the tape center of two cassettes established in the Holes [ 3g and 33g ] upper part is also the same Moreover, when it has arranged like drawing 38, each memory P board 17 of the L cassette 1 and the S cassette 31 serves as a common position. That is, with the record regenerative apparatus which can equip with two cassettes, it can respond to both cassettes by one connector 18.

[0062] Positioning of the cassette to a record regenerative apparatus when the S cassette 31 and the L cassette 1 have been arranged like drawing 38 is explained. First, although a total of every four cassettes [ both / both ] of all is in the position ahead of a cassette, and a back position, respectively, positioning prepares a gage pin to 3e, 3f of the L cassette 1, and 33e and 33f of the S cassette 31, since 33f becomes common, the front tooling holes 3e, 3f, and 33e and, when it has arranged to this appearance. Corresponding to it, by the L cassette 1, arrangement of the height arrangement pin for guaranteeing the height of a cassette will be arranged to 3h and 3i which are back, respectively, and will be arranged, respectively to 33h and 33i which are similarly back by the S cassette 31.

[0063] Since it does not interfere in 3h and 3i in the S cassette 31, the height arrangement pin for L cassette 1 can choose a suitable position. The height arrangement pin 52 for S cassette 31 is formed in the position of drawing 45 (a). The cross section of reel 8 portion when equipping with the L cassette 1 is shown in (b). (a) The position of the height arrangement pin 52 shown in drawing turns into a position of 8h of annular crevices in the middle of 8g of reel attaching parts of a reel 8, and 8f of reel receptacle sections. Since the S cassette 31 has only the L cassetted1 in a position higher than one as already explained, if it is original, although only the height difference d1 interferes in the height arrangement pin 52 of the S cassette 31, 8h of this annular crevice is a position higher than the base of the S cassette 31 also with the enlarged view of drawing 41 so that clearly. Therefore, even if it does not move the height arrangement pin 52 at the time of L cassette 1 wearing, it can become the position of 8h of annular crevices between 8g of reel attaching parts, and 8f of reel receptacle sections, and interference can be avoided. Although a reel 8 rotates, it does not interfere, even if it rotates, since it is 8g and the salient with annular 8f and this crevice is also an annular crevice.

[0064] In drawing 38 which has arranged tooling holes 3e, 3f, 33e, and 33f in the common position, the flat surface of the stop sections 3x and 3v and the flat surface of the stop sections 33x and 33v of the front section of the lower half 33 of the S cassette 31 which were prepared in the front face of the lower half 3 of the L cassette 1 turn into the same flat surface. When it has a later receptacle side and has arranged to this appearance rather than stop section 3v, stop section 3x of the L cassette 1 make 2nd stop section 3x2 near the lateral portion of the 1st stop section 3x1 and L cassette which will overlap stop section 33x of the S cassette 31 in part as mentioned above stand in a row, and are constituted. On the other hand, there is no stop section 3v with a heavy bird clapper in stop section 33v of the S cassette 31, and it forms the 2nd stop section near the side.

[0065] Although the breadth G1 of opening 3p of the L cassette 1 is larger than the breadth G2 of opening 33p of the S cassette 31 when the cassette has been arranged like drawing 38, as for the interior 53 of a tape proposal, most has lapped with 55. Therefore, a common post can be arranged so that it can show any tape of a cassette to this intersection. 3s of impressions of the lower half 3 of the L cassette 1 is located in the position of left lateral section 34a of the front lid 34 of the S cassette 31. this portion -- expanding -- a record regenerative apparatus -- cassette lid opening -- the related view when forming a member 56 is drawing 42

[0066] In drawing 42, for the lid-open close one of the L cassette 1, the open pin (L) 58 is formed in the position which contacts 4d of lateral portions of the front lid 4, and the open pin (S) 57 is similarly formed in the position of left lateral section 34a of the lateral portion 34 of the S cassette 31 a little rather than the open pin (L) 58 in the low position. these two open pins -- cassette lid opening of the shape of a typeface of abbreviation KO -- it attaches in a member 56 -- having -- the open pin (S) 57 and cassette lid opening -- a member 56 is located in 3s portion of impressions of the lower half 3 of the L cassette 1, and avoids interference with the lower half 3

[0067] Next, lid opening tracing of the front lid 44 by the lid opening pin (S) 57 is shown in drawing 44. (a) About - (f), the position of the lid opening pin (S) 57 is carried out in common, and the cassette position is displayed. It is satisfactory, in order to perform lid opening in contact with left lateral section 34a of the front lid 34 in the case of the S cassette 31 and not to interfere with the lid opening pin (L) 58. drawing 43 -- a lid -- opening -- a pin -- (-- L --) -- 58 -- depending -- a front face -- a lid -- four -- a lid -- opening -- tracing -- being shown -- a lid -- opening -- a pin -- (-- L --) -- 58 -- depending -- a front face -- a lid -- four -- a left lateral -- the section -- four -- a -- contact -- and -- a lid -- opening -- moreover -- lid-open -- close -- tracing -- it can set -- a lid -- opening -- Here, although the lid opening pin (S) 57 is in the position of 3s of impressions of the lower half 3 of the L cassette 1, i.e., the position of height 4e of the front lid 4, it has interfered [ in / a position / no ] in height 4e and the lid opening

pin (S) 57 so that clearly / in drawing of each tracing position /.

[0068] Next, the example of wearing to the record regenerative apparatus of the tape cassette by which such cassette sizes differ is explained. Drawing where drawing 47 equipped the same record regenerative apparatus with the S cassette 31 for drawing where drawing 46 equipped the record regenerative apparatus with the L cassette 1 is shown. Magnetic tapes 14 and 44 are guided by guide posts 66, 61, 62, and 65, the rotary-head cylinder 60 and a capstan 64, and the pinch roller 63. The reel table 50 which engages with the supply reel 8 and a take up reel 10 is supported possible [ rotation ] by setting a rotation shaft as the center of rotation of the relay gear 67. In drawing 46, it moves to the position of the reel of the L cassette 1, moves to the position of the reel of the S cassette 31 in drawing 47, respectively, and is positioned.

[0069] The relay gear 67 is alternatively driven by the drive gear 68 which tells the driving force of a capstan 64 to the pin center, large gear 69, and \*\*\*\* it to it with a belt 70. As mentioned above, even if reel positions differ, the burden of a mechanism can constitute few.

[0070] Next, drawing 55 explains positioning when inserting a cassette in the cassette holder 75 which conveys such two cassettes in the cassette ejection position of a record regenerative apparatus, and the position in which record reproduction is possible from drawing 53. When making it the arrangement which shows two cassettes to drawing 38, also within a cassette holder 75, two cassettes must be arranged similarly and must be held. First, it estranges from 75d of right-and-left side plates of a cassette holder 75, and a position is controlled by the center section so that the S cassette 31 is shown in drawing 54. Although the position control means of a longitudinal direction is not specifically described here, the past various methods are proposed, and a right-and-left position is controlled by the method of a certain, and it is inserted from P by it.

[0071] If it does so, in contact with the cassette insertion specification-part material 75a and 75b of a cassette holder 75, a position [ as opposed to a cassette holder 75 in the stop sections 33x and 33v constituted by the lower half ] will be decided, respectively. On the other hand, the L cassette 1 is similarly inserted from P, being guided to 75d of right-and-left side plates of a cassette holder 75, as shown in drawing 53. If it does so, the position to a cassette holder 75 will be decided in contact with the cassette insertion specification-part material 75a and 75c prepared in the cassette holder 75.

[0072] Although cassette insertion specification-part material 75b is in 75c, 75a, and a coplanar, in order to carry out phase opposite in the position of lid stop section 3u where only the thickness of the front lid 4 became depressed rather than the stop sections 3x and 3v of the L cassette 1, a crevice is generated between 75b and 3u. Therefore, as for the lower half 3 of the L cassette 1, a position is decided by 75a and 75c.

[0073] Drawing 55 explains the example which inserts the L cassette 1 in the cassette holder 76 of the record regenerative apparatus which uses only the L cassette 1. In this case, what is necessary is just to locate the cassette position specification-part material 76a and 76b in the position near especially a lateral portion of specification parts 3x and 3v. A cassette can fully be received at intervals of latus to cassette breadth, and position regulation of a cassette is performed very with high precision.

[0074]

[Effect of the Invention] When using alternatively two cassettes by which sizes differ for a record regenerative apparatus as mentioned above according to this invention, position regulation of a cassette can be performed by one of the 1st stop section prepared in one and the common position of the stop section prepared in the small cassette, and two or more of the 2nd stop sections prepared near the lateral portion of a large-sized cassette. Since these two sufficiently larger intervals than two stop section intervals of a small cassette can be taken, the superficial posture of a large-sized cassette can be positioned with high precision. On the other hand, in the record regenerative apparatus which uses this large-sized cassette independently, the superficial posture of a cassette is controllable at intervals of the latus near the breadth of a cassette using the 2nd stop section near the lateral portion of a cassette. Thus, this invention can offer the cassette to which two cassettes are alternatively made as for highly precise position regulation by either an usable record regenerative apparatus or the record regenerative apparatus used independently compared with the conventional method.

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[Translation done.]

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TECHNICAL FIELD

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[The technical field to which invention belongs] this invention relates to the insertion regulation means to the record regenerative apparatus of two or more tape cassettes alternatively used for a record regenerative apparatus.

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[Translation done.]

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## PRIOR ART

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[Description of the Prior Art] Before, in a magnetic recorder and reproducing device, though it is the same record format because of coexistence of the needs of record[ prolonged ]-izing, and the needs of a miniaturization and lightweight-izing, there is a system by which cassette sizes differ. For example, as a VTR for broadcast, "D3 format specification" is equivalent to the system. By this "D3 format specification", the cassette (S, M, L) by which three kinds of sizes differ is standardized.

[0003] The plan at the time of equipping a record regenerative apparatus with S cassette with the shortest chart lasting time and M cassette which has middle chart lasting time at drawing 50 is shown. The M cassette 101 has the supply reel 102 and a take up reel 103, and is \*\*\*\*(ing) the magnetic tape 107 in the front face by the guide post 104, 105 which stood erect to the cassette in the space of opening 106. the tape maximum wound diameter of the supply reel 102, and a reel -- the triangular field expressed with the tangent 109, 110 prolonged from the outer diameter of a hub 108 is the tape guidance field 111 which a magnetic tape 107 can draw out of cassette space by non-contact at the vertical cassette half of the M cassette 101. Therefore, you have to arrange the 1st post to which it shows the magnetic tape 107 which came out of the cassette so that a magnetic tape 107 may exist in this tape guidance field 111. The position of a tangent 109 is decided by composition of a vertical half's side attachment wall.

on the other hand -- a tangent 110 -- a guide post 104 and a reel -- it is decided by the tangent which connects a hub 108  
 [0004] The size of opening 106 and the position of a guide post 104, 105 of the S cassette 112 are as common as the M cassette 101. moreover -- although other structures are almost the same as the M cassette 101 -- a limit of cassette size, and a reel -- from the physical relationship of a hub 113, the tape guidance field 119 of S cassette becomes small compared with the tape guidance field 111 of the M cassette 101, and is included by the tape guidance field 111 of the M cassette 101

[0005] Next, a record regenerative apparatus is alternatively equipped with such two cassettes, and the tape run system for performing record reproduction is explained. the rotary-head cylinder 115 -- a magnetic tape -- 180-degree winding -- high-speed rotation is carried out 116 is a capstan motor and 117 is a pinch roller. Since the magnetic tape 107 which came out of the supply reel 102 is wound around a post 118 in the tape guidance field 119 of the S cassette 112, it is shown even to a post 118 also to the magnetic tape 107 which came out of the supply reel 120 of the S cassette 112 by vertical half \*\*\*\*\* non-contact. Similarly, it is considered that it is also shown to arrangement of a post 121 to the magnetic tape 107 between a take up reel 103, a take up reel 122, and post 121 to all other objects non-contact.

[0006] As shown in drawing 48, the magnetic tape 107 which \*\*\*\*(ed) in the front face is covered with the front lid 123 and the back lid 124, and it is protected so that it may not be easily touched from the outside. This front lid 123 is held in this position by the lock member which it is energized in the direction closed by the elastic member, and is not illustrated. If a record regenerative apparatus is equipped, the lock by the lock member is canceled, an elastic member is resisted, and the front lid 123 will be rotated like drawing 49, and will expose a magnetic tape. open operation of this front lid 123 -- some back lids 124 -- opening -- make it open the back lid 124 wide, when the M cassette 101 descends in contact with a member 125 -- both the front lids 123 interlocked with this back lid 124 are opened wide

[0007] Thus, in the system which equips the same record regenerative apparatus with two or more kinds of tape cassettes, and carries out record reproduction, various devices are mutually made by each cassette. For example, it is made as [ become / a position common to the time of having arranged the tooling holes which insert the positioning member for positioning a cassette to equipment with high precision like drawing 50 ].

[0008] The rear-face view when making drawing 51 the L cassette 130 and the S cassette 112, making opening into a common position, and having arranged is shown. On both sides of opening 106, tooling holes 135 and 136 are formed in the L cassette 130 and the S cassette 112, respectively. 135 is the hole of a perfect circle and, as for tooling holes, 136 has become a long hole. The hatching area shown in the circumference of these tooling holes 135 and 136 shows the area in which the height receptacle of a cassette is possible. This is also common to L and S cassette. There is back broad hatching area 131 and 132 in the L cassette 130. This is also height receptacle area. There is height receptacle area of 137 and 138 in the S cassette 112 similarly. Since it is such composition, with the equipment which can equip with the S cassette 112 and the L cassette 130, a positioning member is arranged in the position equivalent to tooling holes 133 and 134.

[0009] In addition, this positioning member is made as [ receive / the height of a cassette / form the spittle equivalent to the height receptacle area 133 and 134, and ]. When equipped with the S cassette 112, a height receptacle pin is arranged in the position equivalent to 137 and 138, and when equipped with the L cassette 130, a height receptacle pin is arranged in the position equivalent to 131 and 132. Although the S cassette 112 and the L cassette 130 were explained, it is fundamentally the same also in the combination of the S cassette 112 and the M cassette 101, and the combination of the M cassette 101 and the L cassette

130.

[0010] Drawing seen to drawing 52 from each front lid of the S cassette 112, the M cassette 101, and the L cassette 130 is shown. 112a and 112b which are shown by hatching close to both the lateral portions of the S cassette 112 are a salient of the lower half who faces from notching of front lid 112c. the stop prepared in the record regenerative apparatus as these salients 112a and 112b were mostly exposed to the front face of front lid 112c and it was shown in drawing 51 -- the position of the S cassette 112 is regulated in contact with a member 139

[0011] That is, it is the position specification part of the cassette path of insertion when inserting in the cassette holder which takes out a cassette and is conveyed in a position and a record reproduction position. the salients 112a and 112b of the S cassette 112 -- a stop -- if it inserts to the position which contacts a member 139, the rest will convey a cassette to a position by the motor etc. automatically this stop -- the position in the cassette holder of a cassette is regulated by contact of a member 139 and Salients 112a and 112b -- it divides and comes out Salients 101a, 101b, 130a, and 130b have faced from notching of the front lids 101c and 130c also like the M cassette 101 and the L cassette 130. Although the sizes of a cassette differ, the position of this salient is located in the almost same position. this is shown in drawing 51 -- as -- the stop -- it is because there is a merit that a member 139 can be used in common

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[Translation done.]

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**EFFECT OF THE INVENTION**

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[Effect of the Invention] When using alternatively two cassettes by which sizes differ for a record regenerative apparatus as mentioned above according to this invention, position regulation of a cassette can be performed by one of the 1st stop section prepared in one and the common position of the stop section prepared in the small cassette, and two or more of the 2nd stop sections prepared near the lateral portion of a large-sized cassette. Since these two sufficiently larger intervals than two stop section intervals of a small cassette can be taken, the superficial posture of a large-sized cassette can be positioned with high precision. On the other hand, in the record regenerative apparatus which uses this large-sized cassette independently, the superficial posture of a cassette is controllable with the large interval near the breadth of a cassette using the 2nd stop section near the lateral portion of a cassette. Thus, this invention can offer the cassette to which two cassettes are alternatively made as for highly precise position regulation by either an usable record regenerative apparatus or the record regenerative apparatus used independently compared with the conventional method.

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[Translation done.]



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TECHNICAL PROBLEM

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[Problem(s) to be Solved by the Invention] Thus, although carrying out a salient position in common has the merit that it is single and the position specification-part material stopped to the salient can be constituted, a common position is decided by S cassette by which cassette sizes differ. It will carry out by two close to the lateral portion of S cassette which separated if possible. Although this is two points large enough for S cassette, if it sees from L cassette with the largest size, compared with cassette size, it will be hard to say that it is sufficiently large.

[0013] Therefore, if the relative position of the cassette path of insertion of these two position specification-part material shifts, a cassette will take the posture superficially rotated to either to the right position. As a result, the position of various component parts of a cassette produces a gap from the right position.

[0014] Thus, the problem of not going into the hole for release of the reel lock release member by which a positioning member is not inserted in the tooling holes of a cassette even if only anything will control conveyance of a cassette holder with high precision, if a gap arises arises. Composition to which positioning of the cassette by position specification-part material is carried out with high precision from such a viewpoint is called for as a cassette. Compared with cassette breadth, as for L cassette, varying greatly compared with the cassette of others [ cassette / L / position / the ], since the interval of a height is narrow is expected.

[0015] The technical problem of this invention is in two or more cassettes alternatively used for this appearance with the same equipment, and I hear that the variation in the position within the cassette holder of a record regenerative apparatus is large, and cannot position a cassette correctly to a record regenerative apparatus, and it has it. Then, the purpose of this invention offers the cassette composition which is in each cassette and can perform position control within a cassette holder with high precision.

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[Translation done.]

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## MEANS

[Means for Solving the Problem] Since the 2nd stop section is prepared in the position where the means of this invention approached both the lateral portions of a large-sized cassette in the stop section of a large-sized cassette while preparing the 1st stop section in the stop section of a small cassette, and the common position in order to solve this technical problem, if a large-sized cassette is positioned using this 2nd stop section, even if it will be the same mechanism precision, the interval can control a position by laterus' to high degree of accuracy.

[0017]

[Embodiments of the Invention] Two tooling holes in which the cassette positioning member which could equip with invention of this invention according to claim 1 like the record regenerative apparatus with which it is equipped with a small cassette, and was prepared in the aforementioned record regenerative apparatus is inserted, When it is a large-sized cassette with the stop section which contacts the cassette insertion specification-part material prepared in the aforementioned record regenerative apparatus and has arranged by making the two aforementioned tooling holes into two tooling holes and common positions of a small cassette, The 1st stop section in the position where the one stop section of the two stop sections prepared in both the lateral portions of the small cassette which contacts the cassette insertion specification-part material of the aforementioned record regenerative apparatus by approaching is common, It is the tape cassette which constituted two or more 2nd stop sections approached and prepared in cassette both lateral portions to the lower half. If the specification-part material stopped in the 2nd stop section prepared in the cassette holder by approaching both the lateral portions of a large-sized cassette is prepared even if it is the case where two or more cassettes are alternatively used for the same equipment, a large-sized cassette can do positioning very with high precision.

[0018] (Gestalt 1 of operation) The gestalt of operation is explained with a drawing below. in addition, the long tape cassette (L cassette is called below.) of chart lasting time and the short small tape cassette (S cassette is called below.) of chart lasting time -- both, although only right-and-left one side is illustrated, as long as there is no notice, it is the composition of a bilateral symmetry

[0019] Drawing 2 (a), (b), and (c) are the appearance plans, the side elevations, and front view of the L cassette 1. The L cassette 1 mainly consists of the upper half 2, a lower half 3, a front lid 4, and a canopy 5. Drawing 3 is the rear-face view of drawing 2. the reel which a reel exposes to the lower half 3 -- hole 3a and a reel lock -- hole 3b, tooling holes 3c-3f, and always -- the object for edge Light Emitting Diode -- 3g of holes is constituted Moreover, near the four corners of the L cassette 1, the hatching sections 3h-3k are independent respectively, and are prepared four places in the height receptacle area (the support section is called below) used as cassette height criteria. These four support sections 3h-3k show the range which can arrange the cassette height arrangement pin prepared in a record regenerative apparatus.

[0020] Although the tooling holes 3e and 3f which are ahead are in the position which it was prepared in both the sides of the space of opening 3p, and was estranged from the four support sections, moreover, the tooling holes 3c and 3d which are back are formed in the position very near cassette both lateral portions within the limits of the two support sections 3h and 3i in the four above-mentioned support sections.

[0021] Drawing 10 is the lower half's 3 rear-face view and an A-A cross section [ in / drawing 10 / in drawing 11 (a) ], a B-B cross section / in / drawing 10 / in drawing 11 (b) ], and a C-C cross section / in / drawing 10 / in drawing 11 (c) ] like drawing 3. the position where only d1 became depressed from it as tooling holes 3e and 3f were shown in drawing 11 (a) although tooling holes 3c and 3d were constituted by the maximum inferior-surface-of-tongue section (line shown with an alternate long and short dash line) used as the support section as shown in drawing 11 (b) -- always -- the object for edge Light Emitting Diode -- 3g of holes is constituted from d1 by the position where a hollow is still larger and which became depressed d2

[0022] Although opening 3p is mentioned later for details, the space wide opened on the base of the bottom half 3 of a cassette as shown also in the lid opening view of drawing 15 is open for free passage to the upper half's 2 upper surface section.

[0023] Although drawing 13 is in the state which the lid closed, behind the back lid 13 (space of the direction in which cam-groove 3r is formed), space is similarly formed to near the upper half's 2 upper surface in this state. Therefore, it is satisfactory, even if only d1 becomes depressed and the tooling holes 3e and 3f in this opening 3p space constitute it, as shown in drawing 11 (a). moreover -- the same -- always -- the object for edge Light Emitting Diode -- as 3g of holes shows drawing 11 (c), even if it hollows only d2, others are not affected at all

[0024] Moreover, as shown in drawing 10, the existing tooling holes [ 3e and 3f ] hollow forms the sufficiently bigger field than the tooling holes [ 3e and 3f ] aperture. positioning which has the height arrangement section of S cassette although this mentions later -- in order to avoid interference with the major-diameter section of a member, the hollow consists of big fields a little

Although tooling holes 3d and 3f are holes of a perfect circle, 3c and 3e are a long hole configuration. The magnetic tape 14 which had the start edge and termination stopped by the supply reel 8 and the take up reel 10 as shown in drawing 16 is wound and guided 3m inside the tape proposal constituted by the lower half's 3 front face.

[0025] Correspondence with the run system of the L cassette 1 is shown in drawing 1. The interior 55 of a tape proposal currently displayed by hatching is the field to which it shows a magnetic tape, and it must arrange the post 51 of a record regenerative apparatus so that the magnetic tape 14 which ON-comes out of and which is carried out may go into this field. If it does so, since a magnetic tape 14 results in the post 51 of a run system, it can carry out a tape run very with high precision, without contacting no parts of a cassette from the supply reel 8 and a take up reel 10.

[0026] A reel lock mechanism is shown in drawing 7 from drawing 5. A right half shows the brake-on state where the reel lock presser foot stitch tongue 7 engaged with claw part 10a of a take up reel 10 the brake-off state where the reel lock presser foot stitch tongue 7 estranged the left half of drawing 5 from the supply reel 8. Drawing 6 shows the cross section of Brake on, and drawing 7 shows the cross section of Brake off. Usually, since the reel lock presser foot stitch tongue 7 is energized in the direction of a reel with the spring 9, as shown in the drawing 5 right half, claw part 7a at a nose of cam engaged with claw part 10a of a take up reel 10, and it has forbidden rotation of a take up reel 10.

[0027] In addition, the take up reel 10 has composition which is easy to rotate clockwise that it is hard to rotate counterclockwise for the mechanism which rolls round a tape, when rotating clockwise. In the case of the supply reel 8, it becomes the reverse. the reel lock prepared for the lower half 3 of a cassette who shows the reel lock presser foot stitch tongue 7 to drawing 3 -- a hole -- 3b position -- caudad -- opening -- crevice 7b is prepared the bottom When the shaft 11 of a record regenerative apparatus advances into this crevice 7b, as shown in drawing 7, a spring 9 is resisted, the reel lock presser foot stitch tongue 7 retreats, claw part 7b of the reel lock presser foot stitch tongue 7 is estranged from claw part 8a of the supply reel 8, or claw part 10a of a take up reel 10, and rotation of each reel is attained.

[0028] Next, drawing 8 and 9 explain the structure of the supply reel 8. A vertical flange is really constituted by the supply reel 8, and the above-mentioned claw part 8a is prepared in it at the lower flange periphery section. It is caudad energized with the reel presser-foot spring (not shown) prepared for the upper half 2 by heights 8b of the reel central upper part. Drawing 8 shows the engagement state of the supply reel 8 and the reel table 12 prepared in the record regenerative apparatus. Two or more wing section 12a opened to the method of the outside established in the point of the reel table 12 engages with wing section 8c prepared like the supply reel 8, and has the reel table 12 and composition rotated to one.

[0029] As shown in drawing 9, 8d of bodies is constituted by the lower part of wing section 8c of the supply reel 8, and cone section 8e is constituted by the lower part. 8d of bodies makes a rotation deflection the minimum, when it engages with the reel table 12, and centering with the reel table 12 is performed and the supply reel 8 rotates. Moreover, cone section 8e is the interior of a proposal for making smooth engagement of the supply reel 8 and the reel table 12. 8f of reel receptacle sections of the annular height which contacts the reel table 12 at the inferior-surface-of-tongue section of the supply reel 8, and the reel prepared for the lower half 3 with concentric circle composition -- a hole -- 8g of reel attaching parts which consist of an annular height slightly smaller than 3a is constituted Between these two 8f of reel receptacle sections which are an annular height and 8g of reel attaching parts, as shown in drawing, 8h of annular crevices is constituted. the state with the reel table 12 where it is not engaged -- the position of the supply reel 8 -- this lower half's 3 reel -- a hole -- it is regulated by fitting with 8g of reel attaching parts of 3a and the supply reel 8

[0030] Wrap lid composition consists of a canopy 5, a back lid 13, and a front lid 4 magnetic tape 14a \*\*\*\*(ed) by the front face shown in drawing 16, as shown in drawing 13. Each composition is explained referring to the appearance perspective diagram of each lid shown in drawing 23. Shaft 4a prepared in 4d of sides is inserted into 3n of notching sections of notching section 2b of the upper half 2 who shows drawing 22, and the lower half 3, and the front lid 4 is supported free [ rotation ], and is energized with the spring which is not illustrated counterclockwise (direction which closes a lid). engagement of the ends of the front lid 4 -- shaft 5a prepared in side 5b of a canopy 5 is supported by hole 4b free [ rotation ] furthermore, the center of a canopy 5 -- alike -- support -- a hole -- 5c forms -- having -- \*\*\*\* -- this support -- a hole -- shaft 13a of the back lid 13 can be engaged by 5c, and the back lid 13 can rotate freely

[0031] Engagement guidance of the 5d of the shafts of another side of a canopy 5 is carried out at guide slot 2a formed in lateral portion 2c of the upper half 2 who shows drawing 22 and drawing 13. Moreover, engagement guidance of the guide shaft 13b of the back lid 13 is carried out at cam-groove 3r formed in the lower half's 3 opening 3p side.

[0032] As explained above, if the front lid 4 is rotated, a canopy 5, the back lid 13, and the front lid 4 stand in a row in it, and since it is the composition which interlocks and is guided at the upper half 2 and the lower half 3, a canopy 5 and the back lid 13 will be guided at cam-groove 3r and guide slot 2a, and will move them back.

[0033] Drawing 15 explains the switching action of this lid mechanism from drawing 13. By making the lid opening member (not shown) of a record regenerative apparatus contact 4d of a part of lateral portions of the front lid 4, and dropping a tape cassette relatively, the front lid 4 rotates clockwise focusing on shaft 4a. Along with it, a canopy 5 moves to an upper half's upper part behind along with guide slot 2a. Moreover, the back lid 13 also moves upwards along with cam-groove 3r. If the front lid 4 rotates 90 abbreviation, magnetic tape 14a which \*\*\*\*(ed) in the front face like drawing 15 will be exposed.

[0034] The D-D cross section of the lower half 3 who shows drawing 10 is shown in drawing 12 also including a lid mechanism. The stop sections 3v and 3x projected most are prepared for the lower half 3 on both sides of opening 3p at both sides, respectively. Stop section 3x are a latus range compared with 3v. These stop section 3x are divided into the stop section 3x1 and its 3x2 out of range of the range in which S cassette exists when it has arranged in piles with the S cassette 31 mentioned later (

drawing 38 ). as for 3v, the S cassette 31 exists -- it is out of range

[0035] Stop section 3v in this position that was out of range and approached the lateral portion of the L cassette 1, and 3x2 is 3x1 ] the 1st stop section in the 2nd stop section (3v and 3x only call the stop section henceforth). From the front lid 4, it exposes and these stop sections 3v and 3x are formed, as shown in drawing 2 (a), and they serve as the same field mostly with 4g of surface sections of the front lid 4.

[0036] The stop sections 3v and 3x contact the cassette position specification-part material prepared in the cassette holder (not shown) of a record regenerative apparatus, and perform position regulation of the cassette in a cassette holder. The lid stop sections 3u and 3w prepared in the position which became depressed only on both sides of opening 3p at both sides like the stop sections 3v and 3x consist of the stop sections 3v and 3x. These lid stop sections 3u and 3w contact 4h (refer to drawing 13 ) of rear-face sections of the front lid 4, and they secure the sealing nature of a front lid and the cassette by the lower half while they determine a posture when the front lid 4 closes.

[0037] In addition, the composition of the lid stop sections 3u and 3w, the stop sections 3v and 3x, and the front lid 4 which were explained above, and its view are already adopted on VHS or the 8mm videocassette. Furthermore, the lower half 3 has prepared 3s of impressions where only d3 became depressed rather than stop section 3v in the position inserted into lid stop section 3u and stop section 3v. With the front lid 4, as shown in drawing 23 , magnetic tape 14a was added to 4f of front-face sections of a wrap, and 4d of both lateral portions, and height 4e which is a parallel flat surface is provided in the same height as the lower half 3 corresponding to the 3s of the aforementioned impressions. Therefore, since 3s of this impression is covered by height 4e of the front lid 4, it does not spoil sealing nature. As shown in drawing 16 , 3s of this impression also has that are out of the magnetic tape path from the supply reel 8 to a take up reel 10, and the open air touches [ little ] a magnetic tape directly.

[0038] Drawing 4 is drawing showing a lid lock mechanism. Drawing 4 (b) is a plan and shows the front lid 4 with a fictitious outline. Drawing 4 (a) is a side elevation. The lid lock presser foot stitch tongue 6 formed in the lower half's 3 side free [ rotation ] centering on 6d of shafts is clockwise energized with the spring which is not illustrated. Therefore, salient 4c of the front lid 4 and claw part 6a of the lid lock presser foot stitch tongue 6 are engaged, and rotation of the clockwise rotation of the front lid 4 is forbidden. Since salient 6b of this lid lock presser foot stitch tongue 6 is constituted so that it may expose from some lower halves 3, and the front of this salient 6b of the lower half 3 is cut and lacked, Without interfering with a cassette, if a release member (not shown) is made to advance from a record regenerative apparatus within the limits of hatching section 6c shown in drawing, salient 6b of this lid lock presser foot stitch tongue 6 is contacted, a spring can be resisted and the lid lock presser foot stitch tongue 6 can be rotated counterclockwise. Consequently, a lock is canceled and the front lid 4 can be clockwise rotated focusing on shaft 4a.

[0039] The detection optical path 15 for detecting the tape start edge and termination is expressed to drawing 16 . the object for the lower half's 3 always edge Light Emitting Diode -- the light emitting device prepared in the record regenerative apparatus is inserted in 3g of holes, and a rim end and termination can be detected by arranging a photo detector in the position besides the cassette on an optical path, respectively although drawing 17 is in a lid opening state -- the lower half's 3 lateral portion -- an optical path -- a hole 16 is formed and an optical path is formed between a photo detector and a light emitting device this optical path -- a hole 16 -- the front lid 4 -- opening -- the state where exposed like drawing 17 and the front lid 4 has closed the bottom only at the time -- 4d of sides of the front lid 4 -- an optical path -- since a hole 16 is closed, sealing nature is securable

[0040] Next, the function which delivers and receives the information recorded on the tape between a record regenerative apparatus and a cassette is explained. The E-E cross section of drawing 16 is shown in (b) of drawing 18 , and F view view is shown in drawing 18 (a). 17 is a memory P board and is equipped with four terminal 17a which delivers and receives the signal of semiconductor memory and the exterior. This memory P board 17 is inserted and held from the upper part at 3t of slit sections prepared for drawing 16 and the lower half 3 who shows 22, and it escapes from it by the upper half 2, and it constitutes prevention. 3t of this slit section is wide opened by the opening 3p side, and the above-mentioned terminal 17a has exposed it to this opening 3p side. the back of the memory P board 17 -- always -- the object for edge Light Emitting Diode -- 3g of holes is constituted

[0041] Drawing 19 - drawing 21 express the contact situation of the connector for signal transfer, and the memory P board 17 prepared in the record regenerative apparatus. Although the appearance is shown in drawing 40 , a connector 18 consists of a light emitting device 19 and the connector terminal 20 of the shape of four flat spring, and it fixes to a record regenerative apparatus and it is prepared. Four connector terminals 20 have the clockwise energization force by drawing 19 , and touch terminal 17a of the memory P board 17 with the respectively fixed contact pressure. Therefore, the writing of the information on the semiconductor memory of the memory P board 17 and read-out become possible through this terminal 17a.

[0042] The position of terminal 17a is located under the memory P board 17, and the load rate of terminal 17a is made small by taking a large distance of contact 20b of flexion 20a of the connector terminal 20, and terminal 17a. That is, also by dispersion in the relative position of a cassette and a connector 18, there is little change of the contact pressure of the connector terminal 20 to the memory P board 17, and a highly reliable contact arrangement can be secured with the stable contact pressure. The connector terminal 20 was constituted in the U character type, and wearing of a cassette and ejection operation made flexion 20a the upper part, and it is for protecting so that the force with the connector terminal 20 impossible for may be added and a connector terminal may not cause deformation.

[0043] The L cassette 1 explained above and S cassette which has compatibility are explained. They are drawing 24 (a), (b), (c), the appearance plan of the \*\* S cassette 31, a side elevation, and front view. The S cassette 31 mainly consists of the upper half 32, a lower half 33, a front lid 34, and a canopy 35 like the L cassette 1. Moreover, the S cassette 31 has short chart lasting time,

and its flat-surface size of a cassette is also smaller than the L cassette 1. Also in thickness, the thickness H4 of the S cassette 31 has a relation called  $H2 > H4$  to the thickness H2 of the L cassette 1.

[0044] Drawing 25 is the rear-face view of drawing 24. The stop sections 33v and 33x are prepared for the lower half 33 on both sides of opening 33p at both sides, respectively. From the front lid 34, it exposes and these stop sections 33v and 33x are formed, as shown in drawing 24 (b), and they serve as the same field mostly with 34g of surface sections of the front lid 34. The stop sections 33v and 33x contact the cassette position specification-part material prepared in the cassette holder (not shown) of a record regenerative apparatus, and perform position regulation of the cassette in a cassette holder.

[0045] further -- the lower half 33 -- a reel -- hole 33a and a reel lock -- hole 33b, tooling holes 33c-33f, and always -- the object for edge Light Emitting Diode -- 33g of holes is constituted. Moreover, near the four corners of the S cassette 31, the hatching sections 33h-33k are independent respectively, and are prepared four places in the height receptacle area (the support section is called below) used as cassette height criteria. These four support sections 33h-33k show the range which can arrange the cassette height arrangement pin prepared in a record regenerative apparatus. The tooling holes 33e and 33f which are ahead are formed in both the sides of opening 33p, and are within the limits of the support sections 33j and 33k.

[0046] The tooling holes 33c and 33d which are back on the other hand are also within the limits of the support sections 33h and 33i. These tooling holes 33c and 33d are formed in the position very near both the lateral portions of the S cassette 31 like the tooling holes 3c and 3d of the L cassette 1. A G-G cross section [ in / drawing 25 / in drawing 26 (a) ] and drawing 26 (b) are the H-H cross sections in drawing 25. although tooling holes 33c-33f are constituted by the maximum undersurface section (line shown with an alternate long and short dash line) used as the support section -- always -- the object for edge Light Emitting Diode -- 33g of holes is constituted by the position where only d4 became depressed. Since the diameters of the tape maximum volume differ, as for the tape center height H1 from the maximum undersurface section of the lower half 3 of the L cassette 1 shown in drawing 8 and drawing 35, and the tape center height H3 from the maximum undersurface section of the lower half 33 of the S cassette 31, the direction of the L cassette 1 is large with the whole cassette thickness like  $H1 > H3$ . In such composition, the size relation of the cassette thickness direction of the L cassette 1 and the S cassette 31 is as follows.

[0047]  $H1 - d1 = H3$  ..... (1)

$H1 - d2 = H3 - d4$  ..... (2)

(1) \*\*\*\* in which, as for the existing tooling holes [ of the L cassette 1 / 3e and 3f ] flat surface, the tooling holes 33c-33f of the S cassette 31 and the hatching sections 33h-33k exist when a formula considers two cassettes on the basis of a tape center -- it is shown that it is the flat surface of the same height as the lower half's 33 so-called maximum undersurface section. Positioning support of the S cassette 31 and the L cassette 1 by which thickness differs as shown in drawing 41 is carried out so that a tape center may serve as the same height. Then, I hear that the height of the existing tooling holes [ of the L cassette 1 constituted by the lower half 3 / 3c and 3d ] flat surface, i.e., a hollow, is equal to the maximum undersurface section of the lower half 33 of the S cassette 31 exactly, and there is.

[0048] It explains to a detail further using drawing 56. Drawing 56 (a) is drawing where the gage pin 142 is engaging with 33f (the same is said of 33e of course) of tooling holes of the S cassette 31. The gage pin 142 is implanted in the chassis 143, and consists of positioning section 142b which is the same diameter as the diameter of 33f of tooling holes, and cassette receptacle section 142a [ major diameter / path / the ] /. Cassette receptacle section 142a is in contact with the lower half 33 of the S cassette 31, and has specified the height of the S cassette 31 by this cassette receptacle section 142a. Since 33f of these tooling holes exists within the limits of support section 33k, this cassette receptacle section 142a will hold the S cassette 31 correctly in contact with support section 33k.

[0049] On the other hand, drawing 56 (b) is drawing where the L cassette 1 is positioned by the same gage pin 142. As mentioned above, when the L cassette 1 is considered on the basis of a tape center, a cassette base is located by only  $H1 - H3 = d1$  in a low position. Since only the bottom half d1 of a cassette also becomes depressed and constitutes the hollow of the tooling holes 33f and 33e of the L cassette 1 from 33, when a gage pin 142 is made to engage with 33f of these tooling holes, as shown in drawing (b), the upper surface will become depressed and cassette receptacle section 142a will specify the height of the L cassette 1 in contact with a field. Cassette receptacle section 142a should just set up a path so that the outer-diameter section may not interfere in the side attachment wall of a hollow.

[0050] (2) the time of a formula considering two cassettes on the basis of a tape center -- the object for always edge Light Emitting Diode of the L cassette 1 -- the object for always edge Light Emitting Diode of the existing flat surface of 3g of holes, and the S cassette 31 -- it is shown that the existing flat surface of 33g of holes is a flat surface of the same height.

[0051] Since the field inside [ 53 ] the tape proposal shown by drawing 34 is the same as 55 shown by drawing 1, you have to form a post 54 so that a magnetic tape may be guided to this field. The magnetic tape 44 which had the start edge and termination stopped by the supply reel 38 and the take up reel 40 is wound and guided 33m inside the tape proposal constituted by the lower half's 33 front face. The same distance L3 of the L cassette 1 shown in magnetic tape 44a \*\*\*\*(ed) among these interior of tape proposal 33m, the above-mentioned tooling-holes 33e, the distance L1 between 33f, and drawing 16 is the same.

[0052] Moreover, tooling-holes 33e of the S cassette 31 and the distance L2 between 33f are the same as tooling-holes 3e of the L cassette 1, and the distance L4 between 3f. It will be said that this thing can share the gage pin by the side of a record regenerative apparatus by the L cassette 1 and the S cassette 31. Consequently, the magnetic tapes 4a and 44a which \*\*\*\* in a front face serve as the same position like drawing 38.

[0053] Naturally at this time, the tooling holes 33c and 33d prepared behind the tooling holes 3c and 3d prepared behind the L cassette 1 and the S cassette 31 differ in a position. Moreover, since it has prepared near the lateral portion of a cassette,

respectively and the sizes of a cassette also differ, the relative-position relation of both tooling holes does not serve as an equal.

[0054] Although a reel lock mechanism is shown in drawing 29 from drawing 27, since it is the same composition as the reel lock mechanism of the L cassette 1, fundamentally, explanation of composition is omitted. here -- the reel lock of the S cassette 31 -- a hole -- the reel lock of 33b and the L cassette 1 -- a hole -- 3b, since the positions differ when it has arranged like drawing 38 since it constitutes so that it can cancel by the member of the same configuration although it cannot respond to both cassettes by the member fixed to the record regenerative apparatus -- reel lock release of the L cassette 1 -- the shaft 11 which is a member was made into working, and it considered as the composition of which the reel lock of the S cassette 31 can also be canceled

[0055] Although the structure of the supply reel 38 is expressed to drawing 35, since reel structure is the same as the supply reel 8 of the L cassette 1, fundamentally, only a different portion explains. 38f of reel receptacle sections of the annular salient which contacts the reel table 42 is prepared in the undersurface section of the supply reel 38. although 8g of reel attaching parts was constituted from concentric circle composition with 8f of reel receptacle sections by the L cassette 1 -- the slightly larger reel only as 38f of this reel receptacle section by the S cassette 31 than 38f of reel receptacle sections -- a hole -- constituting 33a -- the position of the supply reel 38 -- this lower half's 33 reel -- a hole -- it has regulated by fitting with 38f of reel receptacle sections of 33a and the supply reel 38

[0056] Drawing which equipped the same reel table 50 with the L cassette 1 and the S cassette 31 at drawing 41 is shown. In drawing 41, the engagement state of the S cassette 31 and the reel table 50 and left-hand side show the engagement state of the L cassette 1 and the reel table 50 to right-hand side. The S cassette 31 and the L cassette 1 are the same composition, and can engage with the reel table 50, and wing section 8c, 8d of bodies, and cone section 8e can transmit turning effort. By the L cassette 1 and the S cassette 31, since the height from a tape center to a lower half differs as mentioned above, as the reel receptacle sections 3f and 38f of each cassette are also shown in drawing, it differs.

[0057] 38f of however, reel receptacle sections of the S cassette 31 considering as the minor diameter rather than 8f of reel receptacle sections of the L cassette 1, since the height of 8f of reel receptacle sections of the L cassette 1 is further made lower than the maximum undersurface section of the lower half 33 of the S cassette 31 The reel receptacle sections 38f and 8f are contacted in the reel table 50, respectively, and reel \*\*\*\*\* 50a and 50b which guarantee the height of each reel can be constituted independently.

[0058] Next, although lid composition and lid-open close operation are shown in drawing 31 - drawing 33, it consists of a canopy 35, a back lid 43, and a front lid 34 like the L cassette 1. although it is the same as the L cassette 1 which also shows appearance composition to drawing 23 -- \*\*\*\*\* -- \*\* is structure shown in drawing 12 Although it became depressed to the lower half 3, 3s was prepared and salient 4e was further prepared in the front lid 4 in part by the L cassette 1 corresponding to it There is no height 4e as which the comparison section of the front lid 34 and the lower half 33 is regarded by the L cassette 1 by the S cassette 31. The front lid 34 has the shape of a typeface of abbreviation KO which consists magnetic tape 44a of 44f of the front-face sections of a wrap, and 44d (it is the same as 4d of lateral portions of the front lid 4 of the L cassette 1 although not illustrated) of lateral portions.

[0059] Drawing 30 is drawing showing a lid lock mechanism. (a) is a plan and (b) is a side elevation. Since a lid lock mechanism is also the same composition as the L cassette 1, detailed explanation is omitted.

[0060] The detection optical path 45 for detecting the tape start edge and termination is expressed to drawing 34. the object for the lower half's 33 always edge Light Emitting Diode -- the light emitting device prepared in the record regenerative apparatus is inserted in 33g of holes, and a rim end and termination can be detected by arranging a photo detector in the position besides the cassette on an optical path, respectively drawing 17 -- the lid-open close one of the L cassette 1, and an optical path -- although opening and closing of a hole 16 were explained, the S cassette 31 is also the same composition

[0061] Drawing 36, and 37 and 39 show the maintenance mechanism of the memory P board 17. (2) the formula explained -- as -- criteria [ center / tape ] -- carrying out -- the object for always edge Light Emitting Diode of the L cassette 1 and the S cassette 31 -- the existing Holes / 3g and 33g / flat surface is in the same height always [ this ] -- the object for edge Light Emitting Diode -- the position of the memory P board 17 of the height relation from the tape center of two cassettes established in the Holes [ 3g and 33g ] upper part is also the same Moreover, when it has arranged like drawing 38, each memory P board 17 of the L cassette 1 and the S cassette 31 serves as a common position. That is, with the record regenerative apparatus which can equip with two cassettes, it can respond to both cassettes by one connector 18.

[0062] Positioning of the cassette to a record regenerative apparatus when the S cassette 31 and the L cassette 1 have been arranged like drawing 38 is explained. First, although a total of every four cassettes [ both / both ] of all is in the position ahead of a cassette, and a back position, respectively, positioning prepares a gage pin to 3e, 3f of the L cassette 1, and 33e and 33f of the S cassette 31, since 33f becomes common, the front tooling holes 3e, 3f, and 33e and, when it has arranged to this appearance. Corresponding to it, by the L cassette 1, arrangement of the height arrangement pin for guaranteeing the height of a cassette will be arranged to 3h and 3i which are back, respectively, and will be arranged, respectively to 33h and 33i which are similarly back by the S cassette 31.

[0063] Since it does not interfere in 3h and 3i in the S cassette 31, the height arrangement pin for L cassette 1 can choose a suitable position. The height arrangement pin 52 for S cassette 31 is formed in the position of drawing 45 (a). The cross section of reel 8 portion when equipping with the L cassette 1 is shown in (b). (a) The position of the height arrangement pin 52 shown in drawing turns into a position of 8h of annular crevices in the middle of 8g of reel attaching parts of a reel 8, and 8f of reel receptacle sections. Since the S cassette 31 has only the L cassetted1 in a position higher than one as already explained, if it is original, although only the height difference d1 interferes in the height arrangement pin 52 of the S cassette 31, 8h of this annular



crevice is a position higher than the base of the S cassette 31 also with the enlarged view of drawing 41 so that clearly. Therefore, even if it does not move the height arrangement pin 52 at the time of L cassette 1 wearing, it can become the position of 8h of annular crevices between 8g of reel attaching parts, and 8f of reel receptacle sections, and interference can be avoided. Although a reel 8 rotates, it does not interfere, even if it rotates, since it is 8g and the salient with annular 8f and this crevice is also an annular crevice.

[0064] In drawing 38 which has arranged tooling holes 3e, 3f, 33e, and 33f in the common position, the flat surface of the stop sections 3x and 3v and the flat surface of the stop sections 33x and 33v of the front section of the lower half 33 of the S cassette 31 which were prepared in the front face of the lower half 3 of the L cassette 1 turn into the same flat surface. When it has a receptacle side larger than stop section 3v and has arranged to this appearance, stop section 3x of the L cassette 1 make 2nd stop section 3x2 near the lateral portion of the 1st stop section 3x1 and L cassette which will overlap stop section 33x of the S cassette 31 in part as mentioned above stand in a row, and are constituted. On the other hand, there is no stop section 3v with a heavy bird clapper in stop section 33v of the S cassette 31, and it forms the 2nd stop section near the side.

[0065] Although the breadth G1 of opening 3p of the L cassette 1 is larger than the breadth G2 of opening 33p of the S cassette 31 when the cassette has been arranged like drawing 38, as for the interior 53 of a tape proposal, most has lapped with 55. Therefore, a common post can be arranged so that it can show any tape of a cassette to this intersection. 3s of impressions of the lower half 3 of the L cassette 1 is located in the position of left lateral section 34a of the front lid 34 of the S cassette 31. this portion -- expanding -- a record regenerative apparatus -- cassette lid opening -- the related view when forming a member 56 is drawing 42

[0066] In drawing 42, for the lid-open close one of the L cassette 1, the open pin (L) 58 is formed in the position which contacts 4d of lateral portions of the front lid 4, and the open pin (S) 57 is similarly formed in the position of left lateral section 34a of the lateral portion 34 of the S cassette 31 in the position [ a little ] lower than the open pin (L) 58. these two open pins -- cassette lid opening of the shape of a typeface of abbreviation KO -- it attaches in a member 56 -- having -- the open pin (S) 57 and cassette lid opening -- a member 56 is located in 3s portion of impressions of the lower half 3 of the L cassette 1, and avoids interference with the lower half 3

[0067] Next, the lid opening locus of the front lid 44 by the lid opening pin (S) 57 is shown in drawing 44. (a) About - (f), the position of the lid opening pin (S) 57 is carried out in common, and the cassette position is displayed. It is satisfactory, in order to perform lid opening in contact with left lateral section 34a of the front lid 34 in the case of the S cassette 31 and not to interfere with the lid opening pin (L) 58. drawing 43 -- a lid -- opening -- a pin -- (-- L --) -- 58 -- depending -- a front face -- a lid -- four -- a lid -- opening -- a locus -- being shown -- a lid -- opening -- a pin -- (-- L --) -- 58 -- depending -- a front face -- a lid -- four -- a left lateral -- the section -- four -- a -- contact -- and -- a lid -- opening -- moreover -- lid-open -- close -- a locus -- it can set -- a lid -- Here, although the lid opening pin (S) 57 is in the position of 3s of impressions of the lower half 3 of the L cassette 1, i.e., the position of height 4e of the front lid 4, it has interfered [ in / a position / no ] in height 4e and the lid opening pin (S) 57 so that clearly / in drawing of each locus position /.

[0068] Next, the example of wearing to the record regenerative apparatus of the tape cassette by which such cassette sizes differ is explained. Drawing where drawing 47 equipped the same record regenerative apparatus with the S cassette 31 for drawing where drawing 46 equipped the record regenerative apparatus with the L cassette 1 is shown. Magnetic tapes 14 and 44 are guided by guide posts 66, 61, 62, and 65, the rotary-head cylinder 60 and a capstan 64, and the pinch roller 63. The reel table 50 which engages with the supply reel 8 and a take up reel 10 is supported possible [ rotation ] by setting a rotation shaft as the center of rotation of the relay gear 67. In drawing 46, it moves to the position of the reel of the L cassette 1, moves to the position of the reel of the S cassette 31 in drawing 47, respectively, and is positioned.

[0069] The relay gear 67 is alternatively driven by the drive gear 68 which tells the driving force of a capstan 64 to the pin center, large gear 69, and \*\*\*\* it to it with a belt 70. As mentioned above, even if reel positions differ, the burden of a mechanism can constitute few.

[0070] Next, drawing 55 explains positioning when inserting a cassette in the cassette holder 75 which conveys such two cassettes in the cassette ejection position of a record regenerative apparatus, and the position in which record reproduction is possible from drawing 53. When making it the arrangement which shows two cassettes to drawing 38, also within a cassette holder 75, two cassettes must be arranged similarly and must be held. First, it estranges from 75d of right-and-left side plates of a cassette holder 75, and a position is controlled by the center section so that the S cassette 31 is shown in drawing 54. Although the position control means of a longitudinal direction is not specifically described here, the past various methods are proposed, and a right-and-left position is controlled by the method of a certain, and it is inserted from P by it.

[0071] If it does so, in contact with the cassette insertion specification-part material 75a and 75b of a cassette holder 75, a position [ as opposed to a cassette holder 75 in the stop sections 33x and 33v constituted by the lower half ] will be decided, respectively. On the other hand, the L cassette 1 is similarly inserted from P, being guided to 75d of right-and-left side plates of a cassette holder 75, as shown in drawing 53. If it does so, the position to a cassette holder 75 will be decided in contact with the cassette insertion specification-part material 75a and 75c prepared in the cassette holder 75.

[0072] Although cassette insertion specification-part material 75b is in 75c, 75a, and a coplanar, in order to carry out phase opposite in the position of lid stop section 3u where only the thickness of the front lid 4 became depressed rather than the stop sections 3x and 3v of the L cassette 1, a crevice is generated between 75b and 3u. Therefore, as for the lower half 3 of the L cassette 1, a position is decided by 75a and 75c.

[0073] Drawing 55 explains the example which inserts the L cassette 1 in the cassette holder 76 of the record regenerative



apparatus which uses only the L cassette 1. In this case, what is necessary is just to locate the cassette position specification-part material 76a and 76b in the position near especially a lateral portion of specification parts 3x and 3v. To cassette breadth, at an interval large enough, a cassette can be received and position regulation of a cassette is performed very with high precision.

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[Translation done.]

## \* NOTICES \*

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2. \*\*\*\* shows the word which can not be translated.
3. In the drawings, any words are not translated.

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DESCRIPTION OF DRAWINGS

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## [Brief Description of the Drawings]

- [Drawing 1] The plan of L cassette in the gestalt of operation of this invention
- [Drawing 2] The appearance flat surface, the side elevation, and front view of said L cassettes
- [Drawing 3] The rear-face view of said L cassettes
- [Drawing 4] The lid lock mechanism flat surface of said L cassettes, a side elevation
- [Drawing 5] The reel lock plan of said L cassettes
- [Drawing 6] The cross section at the time of reel lock operation of said L cassettes
- [Drawing 7] The cross section at the time of the reel lock inoperative of said L cassettes
- [Drawing 8] The side elevation at the time of the engagement to the reel table of the reel of said L cassettes
- [Drawing 9] The side elevation of the reel of said L cassettes
- [Drawing 10] The rear-face view of the lower half of said L cassettes
- [Drawing 11] Drawing showing cross-section A-A of drawing 10, B-B, and C-C
- [Drawing 12] Drawing showing cross-section D-D of drawing 10
- [Drawing 13] The side elevation of the lid mechanism of L cassette in the gestalt of operation of this invention
- [Drawing 14] The side elevation of the lid mechanism of L cassette in the gestalt of operation of this invention
- [Drawing 15] The side elevation of the lid mechanism of L cassette in the gestalt of operation of this invention
- [Drawing 16] The plan of said L cassettes
- [Drawing 17] The side elevation at the time of lid opening of said L cassettes
- [Drawing 18] The flat surface of the semiconductor memory section of said L cassettes, a side elevation
- [Drawing 19] A memory call of said L cassettes, the side elevation of connector wearing of writing
- [Drawing 20] Front view of drawing 19
- [Drawing 21] The plan of drawing 19
- [Drawing 22] The perspective diagram of L cassette top in the gestalt of operation of this invention, and a lower half
- [Drawing 23] The perspective diagram of the lid mechanism of said L cassettes
- [Drawing 24] The appearance flat surface of said S cassettes, the side, front view
- [Drawing 25] The rear-face view of said S cassettes
- [Drawing 26] Drawing showing cross-section G-G of drawing 25, and H-H
- [Drawing 27] The reel lock plan of S cassette in the gestalt of operation of this invention
- [Drawing 28] The cross section at the time of reel lock operation of said S cassettes
- [Drawing 29] The cross section at the time of the reel lock inoperative of said S cassettes
- [Drawing 30] The lid lock mechanism flat surface of said S cassettes, a side elevation
- [Drawing 31] The side elevation of the lid mechanism of said S cassettes
- [Drawing 32] The side elevation of the lid mechanism of said S cassettes
- [Drawing 33] The side elevation of the lid mechanism of said S cassettes
- [Drawing 34] The plan of said S cassettes
- [Drawing 35] The side elevation at the time of the engagement to the reel table of the reel of said S cassettes
- [Drawing 36] Front view of the semiconductor memory section of said S cassettes
- [Drawing 37] The side elevation of drawing 36
- [Drawing 38] The plan of S in the gestalt of operation of this invention, and L cassette
- [Drawing 39] The perspective diagram of the semiconductor memory section of said S cassettes
- [Drawing 40] The perspective diagram of the connector in the gestalt of operation of this invention
- [Drawing 41] The side elevation of the engagement to the reel table of S in the gestalt of operation of this invention, and L cassette
- [Drawing 42] said -- the lid opening mechanism plan of S and L cassette
- [Drawing 43] The side elevation of lid opening tracing of said L cassettes
- [Drawing 44] The side elevation of the lid opening mechanism of said S cassettes
- [Drawing 45] The flat surface of the height positioning mechanism of said S cassettes, a side elevation
- [Drawing 46] The plan of application to the record regenerative apparatus of said L cassettes

[Drawing 47] The plan of application to the record regenerative apparatus of said S cassettes

[Drawing 48] The side elevation of the lid-open closed section in the conventional tape cassette

[Drawing 49] The side elevation of the completion of lid opening in the conventional tape cassette

[Drawing 50] The plan of application to the record regenerative apparatus of two tape cassettes by which the conventional sizes differ

[Drawing 51] The conventional S, L cassette arrangement rear-face view

[Drawing 52] The view view from [ of the conventional tape cassette ] a front lid

[Drawing 53] The plan which inserted L cassette of this invention in the cassette holder

[Drawing 54] The plan which inserted S cassette of this invention in the cassette holder

[Drawing 55] The plan which inserted L cassette of this invention in the cassette holder

[Drawing 56] The positioning block diagram to the record regenerative apparatus of two tape cassettes by which the thickness of this invention differs

[Description of Notations]

1 L Cassette

2 Upper Half

3 Lower Half

3c, 3d, 3e, 3f Tooling holes

3x The 1st stop section, the 2nd stop section

3v, 3x2 The 2nd stop section

31 S Cassette

33 Lower Half

33c, 33d, 33e, 33f Tooling holes

33x, 33v Stop section

75a, 75b, 75c Position specification part

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[Translation done.]

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TITLE: Positioning mechanism of tape  
cassette for recording/reproducing appts such as  
VTR - has position regulation part, which regulates  
positioning of large and small cassettes with first, second,  
third and fourth clamp parts according to use  
situation of cassettes

PATENT-ASSIGNEE: MATSUSHITA DENKI SANGYO KK[MATU]

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1996JP-0169176 (April 6, 1993)

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ABSTRACTED-PUB-NO: JP 08329647A

BASIC-ABSTRACT:

The positioning mechanism includes a first clamp part (3x) and a second clamp part (3v) which are provided at the front face of a large (L) cassette (1). The first clamp part extends from the side face part to the central part and a part of it is overlapped by a third clamp part (33x), which is positioned at a small (S) cassette (31). The second clamp part and a fourth clamp part (33v) comprised by the small cassette are provided at different areas.

Multiple first registration holes (3c-3f) and second registration holes (33c-33f) are provided at the large and small cassettes, respectively. A position regulation part of a cassette electrode holder is set at a position, so that it faces the first, third and fourth clamp parts. The small cassette is used independently by positioning with the third and fourth clamp parts and the large cassette is used independently by positioning with the second and third clamping parts.

ADVANTAGE - Enables to control superficial attitude of cassette at large space along breadth of cassette. Performs highly precised positioning. Utilizes large and small cassettes, selectively.

CHOSEN-DRAWING: Dwg.9/56

TITLE-TERMS: POSITION MECHANISM TAPE CASSETTE RECORD  
REPRODUCE APPARATUS VTR  
POSITION REGULATE PART REGULATE POSITION  
CASSETTE FIRST SECOND  
THIRD FOURTH CLAMP PART ACCORD SITUATE CASSETTE

DERWENT-CLASS: T03 W04

EPI-CODES: T03-E01B; T03-N02; T03-N03; W04-B04B6;  
W04-B10A;

PAT-NO: JP408329647A  
DOCUMENT-IDENTIFIER: JP 08329647 A  
TITLE: TAPE CASSETTE  
PUBN-DATE: December 13, 1996

INVENTOR-INFORMATION:

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ABSTRACT:

PURPOSE: To perform the positioning of a large size cassette highly accurately by the position defining member of a device side in a recording/reproducing device, in which a plurality of cassettes having different sizes are loaded.

CONSTITUTION: In an L cassette 1 having engaging parts 3x and 3v in its front face, the engaging part 3x forms a wide surface from a cassette side face part to a cassette center, its one part and the engaging

part 33x of an S  
cassette 31 are laid over the other and the engaging part  
3v is formed in a  
region different from the engaging part 33v of the S  
cassette 31. Cassette  
holder position defining parts are respectively formed in  
positions relative to  
the engaging parts 3v, 33v and 33x. The S cassette 31 is  
positioned in the 33v  
and 33x positions and the L cassette 1 is positioned in the  
3v and 33x  
positions.

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